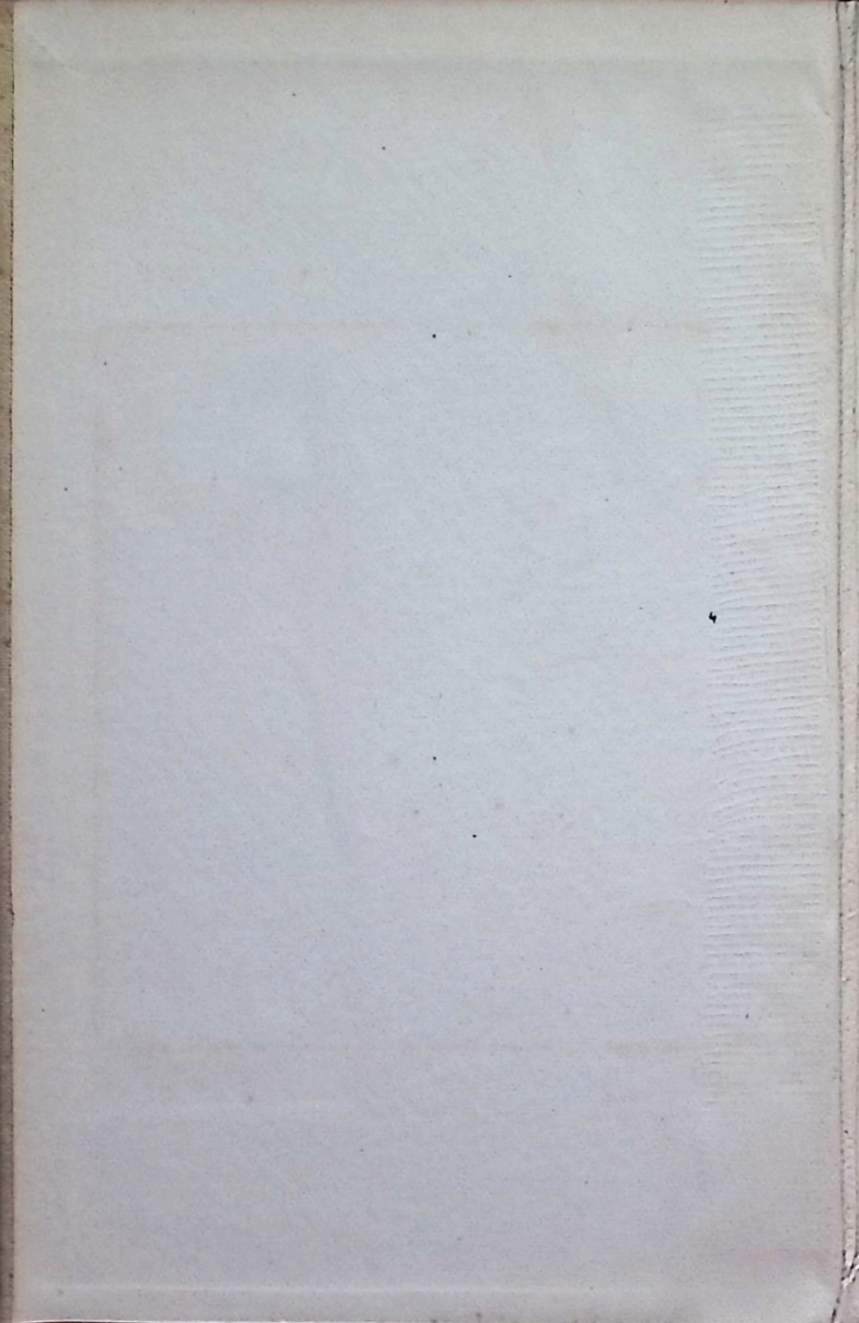


THE
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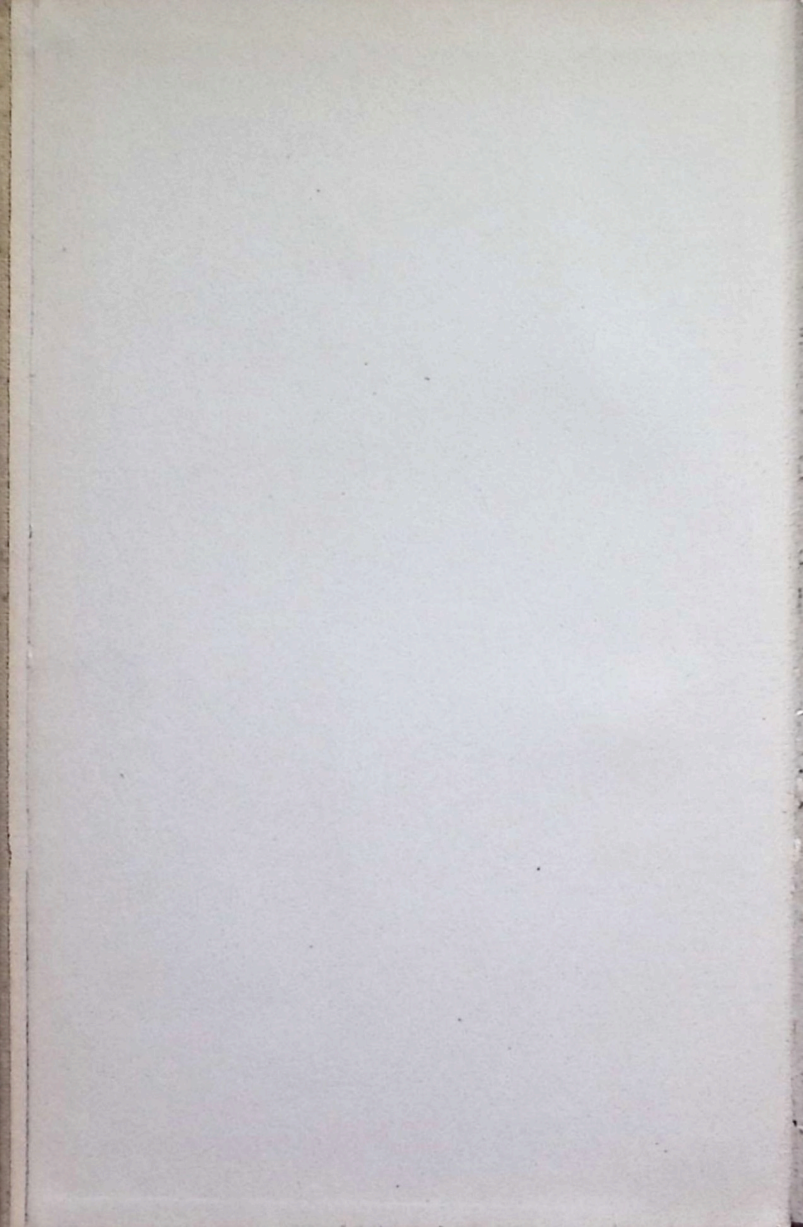


CHARLES E. BINNS



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PORCELAIN EWER IN FLORENTINE STYLE FROM THE
ROYAL WORCESTER WORKS.

THE STORY
OF
THE POTTER

POPULAR ACCOUNT OF THE RISE AND PROGRESS
OF THE PRINCIPAL MANUFACTURES OF POTTERY
AND PORCELAIN IN ALL PARTS OF THE
WORLD, WITH SOME DESCRIPTION OF
MODERN PRACTICAL WORKING

BY
CHARLES F. BINNS

WITH FIFTY-SEVEN ILLUSTRATIONS

NEW YORK
M. F. MANSFIELD
1895



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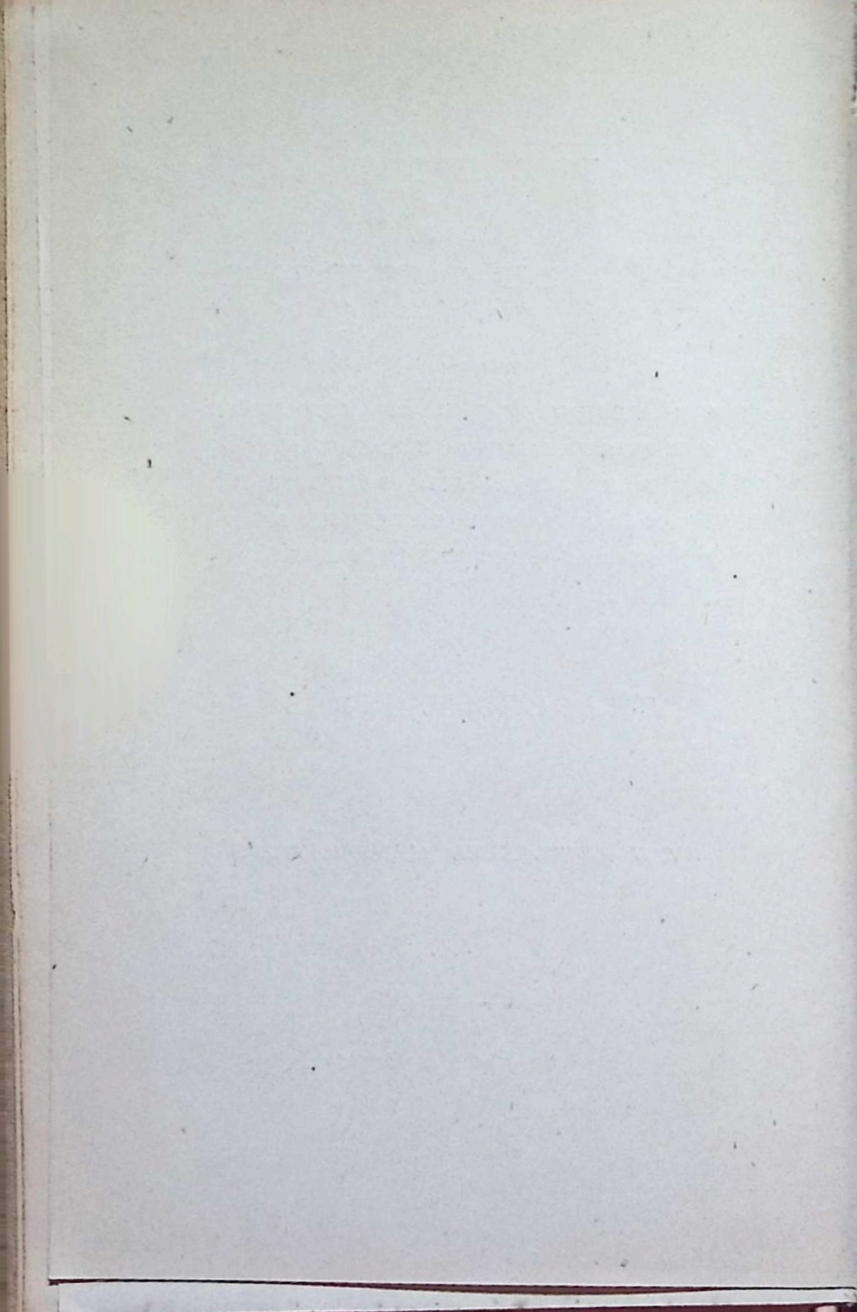
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P R E F A C E

So many complete and valuable works dealing with the history of pottery have been published that any addition to the number would seem superfluous, were it not for the fact that the majority of the existing books are either too voluminous or too advanced for the average reader. In other words, they are books for specialists and collectors rather than for the reading public. "The Story of the Potter" has been written in the endeavour to render into popular language the most fascinating of all histories, and to relate the growth of an important national industry, with its parallels in other lands, in a manner that shall prove neither tedious nor abstruse.

Every previous writer has been consulted where at all possible, and conflicting accounts have been harmonised when this could be done. The chapters on the practical side of the subject are entirely new, and are the outcome of a lengthened experience in a large manufactory. The chronology of pottery, in the arrangement of which the kind help of Mr. Chas. H. Read is warmly acknowledged, does not seem to have previously been attempted, and, though somewhat imperfectly carried out, may prove a nucleus for others to work upon.

C. F. B.

WORCESTER, *September 1897.*

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THE STORY OF THE POTTER

INTRODUCTION

THE PRIMEVAL POTTER

FAR back in the remote ages of antiquity the first potter lived. Who he was, or where he worked, there is no possibility of knowing, but his life and labour are facts which are demonstrated by the existence of clay-work to-day.

It is scarcely too much to say that the art of the potter is almost coeval with the creation of man, for, with the single exception of husbandry, there is no art so widely spread throughout the whole human race. The man with an idea soon began to push his way. Evidences of primitive thought can be found in the chipping of a stone axe and in the birth of an alphabet, but the work of the potter goes even further than this. Perchance the impression of a naked foot upon yielding clay met his eye. The hollow would hold water, and what would be easier than to dig out the piece of clay, hollow and all? Or the idea may have owed its formation to the practice of overlaying a woven vessel with clay in order to enable it to be placed on the fire. The heat would harden the

clay, and two lines of thought would be awakened at once, for it must be admitted that the discovery that clay could be worked is quite apart from the far more important discovery that it could be hardened by fire. There is no doubt that the first clay-work was not burned, but only sun-dried, and in a climate such as that of the countries which are commonly regarded as the cradle of the arts, sun-dried clay would be very hard. At the same time it must be acknowledged that a sun-dried vessel was not of great use to hold liquid, though it might have been utilised for grain or meal.

Dr. Birch says, "The brick is classed amongst the earlier inventions of the arts, and has descended, with various modifications, from the building of the Tower of Babel to the present day"; but the brick is also one of the earliest applications of pottery to the use of man. The builders of Babel said one to another, "Let us make brick and burn them thoroughly," as though unburned bricks were well known but considered to be inferior.

The prevalence of mud-walled houses in the East, and the knowledge possessed by almost every savage nation of the convenience of "wattle and daub," seem to show that the idea of building in clay is very ancient, and to point to the probability that the idea of utilising the properties of hardened earth originated in a wall rather than in a vessel. In brick-making the properties of the clay would reveal themselves, and a skilful worker would produce truer lines than ordinary.

Who shall say how the effect of fire upon the clay was made known? By accident surely.

Perchance in the dead of night some primitive household was awakened by a cry of "Fire!" and found the whole of their belongings consumed inside the four mud walls. But what is this? On searching the ruins for any possible remains, the clay walls are found hardened and changed in colour. A new substance has been formed, an idea is born.

It is stated that roast pork was discovered by a Chinaman who scorched his fingers on touching the body of a pig which had been burned to death in its sty. The fingers, quickly carried to the mouth to assuage the pain, conveyed the flavour of the "crackling," and burnt pig became the rage. But even as the discovery was soon made that it was not necessary to burn a sty in order to roast a pig, so it would be found that bricks could be burned without the immolation of household goods.

It is not unlikely that improvements in brick-making led to certain makers impressing their marks upon the soft clay, and thus the possibility of giving to the clay a shape of some other kind might be revealed. The step from this to the formation of a vessel would not be very great, and so, possibly, the thumb-pressed work of the primitive ages began.

The first exertions of mankind have always been directed towards providing himself with food, and it is not surprising that the efforts of the primeval potter should have taken this direction.

Judging from the contents of the British barrows which will be spoken of more fully in the proper place, a large proportion of the earliest clay-works

were devoted to domestic use ; this is not hard to understand, for even those few peoples who have no knowledge of pottery utilise either shells, gourds, or basket-work for food vessels. The necessity for this was of course greatly increased as grain became a marketable commodity, and the skill of the potter was taxed to provide more capacious vessels both for storage and transport.

Presently the unaided hand would be found incapable of producing pieces large enough to meet the demand, and, necessity being the mother of invention, a wheel or table was contrived by which the clay could be revolved as the potter guided the formation of its shape with his hand. This represented an enormous advance, and, to judge by the sensation caused in Central Africa at the present day by the sight of a wheel of any kind in operation, great must have been the astonishment in some long-forgotten settlement when the inventive potter first set his wheel in motion. The imagination readily pictures the scene. A hot Eastern sun. A few mud huts. Beside one of these a rude barbarian seated in front of the new wonder. The inhabitants gather round and watch as the potter presses his clay on to the top of the wheel. Murmurs of wonder arise as the shapeless mass is formed into a hollow vessel as though by supernatural power, and the successful man is elevated to the position of a magician, and eventually, by tradition, into that of a god. Think of the delight of the primeval small boy who mischievously pushed his stick against the soft sides of the revolving cup, and unconsciously produced a decoration—the innocent forerunner of

the modern "liner," who places a plate upon just such a wheel in order that a line may be truly run upon its edge. A beginning having been made, nothing was easier than to improve the matter. Columbus having once made the egg to stand, it could easily be done again; and so the wheel being invented it was doubtless gradually improved, and the possibilities thus opened up were taken advantage of by degrees.

PART I

CHAPTER I

FROM THEBES TO ROME

"IN Egypt the art of pottery is attributed," says Dr. Birch, "like the other arts and sciences, to the invention of the gods," and as Egypt and the adjacent lands are admitted by general consent to fill that particular quarter of the globe in which the arts originated, it is not likely that the knowledge of pottery came from without. It may therefore be regarded as proved that the art of the potter existed and flourished before tradition had yielded to history or speech had become enshrined in writing.

The existence of early sun-dried brick has already been remarked upon, and the details of these would almost form a separate monograph. Pottery proper begins with the formation of vessels and figures, whether sun-dried or burned. Very

few specimens of unbaked clay vessels or figures have been preserved, and none that can be shown to have been made for use; therefore it will be possible to deal at once with burned clay or terracotta as virtually the first permanent production of the potter.

At Beni Hassan a scene is depicted which gives in a few lines the methods by which the potters then worked. At the top are four wheels, at each of which a potter is seated. Their attitudes are most characteristic, and it is interesting to notice that the action by which the revolving clay was pressed into the desired shape by the Egyptians is practically the identical action of the potter of to-day. It is evident from these outlines that the practice was to place a large quantity of clay upon the wheel at one time, one vessel after another being made from a portion of the same mass of clay. This method is adopted in some Eastern countries at the present time. The form of the furnace is shown in the lower part of the same drawing.

The vessels thus made in Ancient Egypt were used for a variety of purposes. Some for holding liquids were of jar shape; some were flat for meats and other foods; small bottles for salves and perfumes, drugs and cosmetics, were much in demand; and a large number of specimens have been preserved in the tombs, where they were placed in accordance with the custom of their funeral rites.

Amongst the best known pieces are the amphoræ, or two-handled vases, which were made both with and without feet; in the latter case the vase was

sometimes elongated at the base that it might be securely inserted into a hole in the ground. Store vessels, without handles, of this form have been found, and there is no doubt that the value of earthenware as a cool and safe receptacle for foods was perfectly recognised in the Ancient Egyptian pantry. Pharaoh's chief butler doubtless used



Decorated Egyptian Vase.

many such-like pieces for the storage of his wines, and the chief baker would need a goodly number for the preservation of "bakemeats."

But it was not for simply useful purposes that these wares existed. There evidently arose at a very early period the idea that clay could be beautified. Not that these decorated pieces were ever used for ornamental purposes only—that

development must be reserved to a later date—but the vases placed in the tombs were often imitative of more valuable specimens considered too good to bury, and in addition to this there was evidently a demand for some kind of decorative treatment of the vessels brought to table. In the case of rough terra-cotta the decoration usually took the form of simple bands of dark colour, or of more detailed treatment in simple tints, which were frequently laid on in varnish and not fired. A less common decoration consisted of incised lines more or less elaborate, sometimes amounting to a design, but more often limited to a mere breaking up of the plain surface.

The aryballos here illustrated is an example of this class of work. It is made of a finer clay and is slightly polished on the surface. The design consists of the cow of the goddess Hathor, and round the outer edge is an inscription of a congratulatory character. The work is executed in a superior style, and is evidently more advanced than the plain terra-cottas.

The porosity of the lightly burned clay must have constituted a serious objection in some of the uses to which the vessels were put, and it is no matter for surprise that attempts were soon made to overcome this defect. Some pieces had the pores closed with wax or a similar substance, but the invention of glaze overcame all difficulties. Glass was known at a very early period, but whether glazed pottery or glass existed first cannot now be determined. In all probability the discovery of each was accidental. Soft pottery will assume a semi-glazed surface at an unduly severe heat, and

it may be that the accidental over-firing of a kiln led to the improvement. But however it originated great use was very soon made of the knowledge.

It is remarkable to notice how the Ancient Egyptian potters grasped the principles of the relation of body to glaze. The fine blue glaze they so largely used on the ware erroneously termed porcelain could not have been produced



Egyptian Aryballos: Cow of Hathor.

at all on the red terra-cotta, first, because the red colour would have destroyed the blue, and secondly, because the nature of the clay would have prevented the adherence of the glaze at all. Accordingly they fabricated a porous sandy body which was nearly white, and which owed its cohesion to the partial melting of the alkalies it contained. The use of this material, however, demanded a new set

of conditions. It could barely be formed on the wheel, as it was so deficient in plastic quality, and consequently very few vessels are found of this ware. On the other hand, the sandy mixture could readily be shaped in moulds, and this method of manufacture was accordingly employed. Large numbers of sepulchral figures have been preserved, and also various ornaments and toys. Finger rings are continually being brought to light from the tombs, and beads and amulets are found in large numbers. More than one colour was used, but the particular alkali (soda) generally employed was that which most favoured the development of the rich turquoise blue. This colour is said to date from the sixth dynasty, and, to judge from the uses to which it was put, it must have been considered to be of great value. The Egyptians knew the worth of precious stones and gold for ornaments, so that it is scarcely a matter of surprise that the brilliant blue glaze should have been highly esteemed.

This glazed ware has been preserved to the present time in far larger quantities than has the common pottery, not only from the fact that the latter was more perishable, but because the figures, deities, amulets, and charms produced in the glazed ware were usually deposited in connection with embalming or funeral rites, and have thus remained intact.

The stages through which pottery passed in Egypt are typical of the progress in other countries, but from time to time new features will be found to develop themselves.

In Assyria and Babylonia a wonderful use was

made of clay in the employment of tablets for the purpose of writing. The country was provided with vast deposits of fine alluvial clay, and this



Egyptian Blue Glazed Ware (British Museum).

was made up into prisms, cylinders, and tablets which were impressed, while still soft, with the elaborate cuneiform characters.

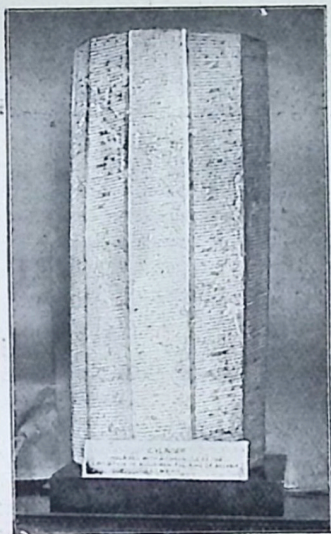
Dr. Birch says that "the idea of issuing journals, title-deeds, inventories, histories, prayers, and poems, not from the press but from the kiln, is startling in the nineteenth century." But what a benefit to the history of the world! These Assyrian inscriptions, imperishably fixed in their original perfection, have contributed more to a complete knowledge of the life of the people of Nineveh and Babylon than have the massive sculptures or the remains of noble palaces. So far as can be gathered from the inscriptions themselves, the whole of the writing of the time seems to have been done in this manner. The libraries contain documents of every description, even to catalogues and tables of weights and measures. Private letters and contracts have also been brought to light and translated, while numerous historical records throw a flood of light upon Sacred History and upon the doings of the surrounding nations.

The manner of the writing is more or less a matter of conjecture, but from a careful examination of the elaborate marks it would seem that a tool with an angular head was employed, of which one or more edges were pressed upon the soft clay as different letters were needed. There is no evidence of the use of a style such as was afterwards employed to write upon tablets of wax, but it is not impossible that the idea of using a yielding surface originated both methods.

The vast importance of this use of clay may be emphasised by pointing out that of the existing Hebrew manuscripts of the Old Testament books, none dates from an earlier period than about the

Norman Conquest, while here are documents in their original form, without possibility of clerical error, being read and understood some 2,700 years after they were written.

But, after all, the interest attaching to these



Assyrian Cylinder.

documents is literary rather than ceramic, though such a unique use of clay must be important to every potter. The countries in which these tablets were invented also had their pottery of daily use. Comparing the jars and vases with

those of Egypt, a curious similarity is found in the nature of the clay, but the superior quality of the Egyptian work is manifest. The vases were used for sepulchral as well as for domestic purposes, specimens having been found which contained burnt human bones.

It must not, of course, be imagined that all the pottery lately exhumed is of the same ancient date. The differences due to varying age are not readily observed, but in a kingdom which existed during many generations there must be changes in material and method. Then as nations knew more of their neighbours trade arose, and caused the importation of wares made elsewhere. Thus Greek vases have been found in Assyria, and in the hands of those who were incapable of expert opinion might have caused misleading deductions. In addition to this, people of foreign nationalities settled in the land and brought with them their own habits and industries, and so the later stages of work in any country cannot be as pure in national characteristic as the earlier.

This is evident from some of the Assyrian wares which are found covered with inscriptions, not now impressed but written, in languages such as Hebrew, Chaldee, and Syriac. These writings were in some cases wrought into a decoration, a style that continues in Eastern lands even to the present day, but here again the interest belongs rather to the writing than to the clay. The decoration of the pottery of Assyria was even more primitive than that of Egypt. They seem to have attempted little more than a few scratched lines, with sometimes the addition of a black pigment.

Glazed ware was not unknown, but the quality of both body and glaze was very poor; the Egyptian turquoise was imitated but not equalled, though it seems to have been used to a considerable extent. There are also traces of a white ware having been manufactured, but so far few objects have been recovered.

The Ancient Greeks are rightly considered to have produced the finest works in rude clay that have ever been seen. It is probable that their knowledge of pottery extended back almost to the heroic age, but even their primitive and archaic pieces reveal a remarkable force of idea.

The word "ceramic" is derived from the Greek "keramos"—pottery, and this in turn may have had its derivation either in "keras"—a horn, or "kerannumi"—to mix (Birch).

Pottery in Greece passed through the usual stages of sun-dried and burned bricks, tiles, ornaments, and vases. Of the sun-dried clay barely a trace remains, but of bricks and tiles which were burned there are abundant examples. The roofing tile is a development of the building brick, and the possibility of modelled reliefs on spout and cornice seems to have aided in opening the eyes of the Greek potters to the advantage of their material. Tiles are said to have played an important part in history, inasmuch as Pyrrhus II., King of Epirus, was slain by a fragment thrown from a housetop at the siege of Argos (B.C. 272). †

Greek vases exist in great abundance in all the important museums; Dr. Birch computes that there are some fifteen thousand of them in various collections. The source of all these has been the

ancient tombs in which they were placed. The following extract is from a description by Sir William Hamilton :—

“The most ordinary sepulchres are constructed of rude stones or tiles, and are of a dimension just sufficient to contain the body and five or six vases ; a small one near the head, and others between the legs and on each side, but oftener on the right side than on the left. The better sort of sepulchres are of much greater dimensions, . . . and have the appearance of small rooms. The body is found on its back on the floor with the vases placed round it ; and sometimes vases with handles have been found hanging upon nails of iron or bronze attached to the side walls. The vases in the larger sepulchres, or subterranean rooms, are always more numerous, of a larger size, and of a superior quality in every respect to those of the ordinary sort of sepulchres.”

These tombs are found in all sorts of places throughout Italy, Sicily, and Greece, and in the early days of discovery the vases were named “Etruscan” because they were found in sepulchres in the Etruscan territory. The purpose for which the vases were placed in the tombs does not seem to be satisfactorily determined. Sir William Hamilton states that in two instances only were the remains of food found, a fact which rather disposes of the theory that they were intended to provision the soul during its passage to another world. Some are shown to have contained the ashes of the dead, and some bear marks of fire, as though they had been placed with the body upon the funeral pyre ; but in the vast majority of cases no

definite purpose can be assigned to account for their presence in the tombs.

It will not be possible, within the limits of this work, to enter upon an exhaustive description of Greek vases. Several monographs exist which



Greek Vase, Geometric Style.

deal more or less fully with this as a special subject. It must suffice, therefore, to lay down the broad lines which separate the styles or periods of Greek fictile art.

A beginning was made with unglazed wares, of which the principal were the large pithoi, or casks,

used to contain large quantities of food or wine, and the amphoræ, or two-handled vases, with pointed base, which were the main vessels of transport. The amphoræ made in Rhodes appear to have been of superior quality, demonstrating the suitability of the Rhodian clay for potters' use. The bulk of these wares were entirely undecorated, save for an occasional incised line. It is interesting to note that in this porous ware the Greeks made flower-pots, which were much used for the cultivation of tender plants.

The great mass of Greek vases belong to the type of glazed ware. Made of fine red clay, they were usually decorated with black or other dark pigment, and were coated with an extremely thin alkaline glaze.

The potter's wheel was used from a very early period, though a few antique pieces are known to have been moulded by the unaided hand. Upon his wheel the potter was able to create those marvellous forms that are now the delight of the observer. The perfection of line was of course not obtained all at once, though the shapes came nearer to perfection than the decorations. The early treatment was a development of simple lines. The meander or key pattern soon asserted itself, and it is evident that basket-work largely influenced the decorator. There does not seem to have been, at this early period, any effort at pictorial treatment, the sole desire being to cover the bare surface of the clay with interlacing lines. At the same time it must be acknowledged that the arrangement of the pattern was good, and that the outline was usually harmonious. This geometric

style is the earliest of the decorations, and cannot be considered later than the seventh century B.C.

Following upon this conventional treatment comes the introduction of birds and animals drawn in archaic manner; no human beings are as yet apparent. The clay is not yet of fine quality and



Archaic Greek Vase.

seems imperfectly mixed. There seems to have been still a fancy for the geometric, with a desire to depart from the severe simplicity of mere line. The vases are in many cases divided into bands or friezes, and between these bands are placed in *silhouette* birds and animals which are often repeated in processional order. The effect,

artistically, is good, and it will be noticed that the idea has been taken up in modern times for decorative purposes. The form of the vase itself here began to advance from the rude angularity formerly apparent towards a softer outline. The colour of the ware varies from a pale fawn to a warm brown, while the decoration is still in black, but with details here and there scratched with a sharp tool.

On the introduction of the human figure the principle of bands was maintained, and the figures, in black on the ground-colour of the clay, were treated in primitive, almost grotesque, fashion. The eyes are round and staring, the bodies and limbs elongated and stiff; but for all this there is a great amount of vigour in the drawing, and the life and activity of the groups are well expressed. Dr. Birch says: "The most remarkable known vases of this class are the Panathenaic amphoræ discovered by Mr. Burgon, and the amphora discovered by M. François at Chiusi, now at Florence." These vases date from B.C. 460.

Following upon the first use of the human figure, several minor changes may be noted as the art slowly improved. The eyes are drawn as they would appear if seen from the front, with round pupils, the face itself being in profile. Paler tints are used, the flesh-tones in the female figure are expressed by light colours, and the details of drapery are more carefully incised. The drawing is less grotesque. The way, in fact, was being prepared for the great change from black figures on red to red figures on black. This change meant a great deal. It became possible,

when the drawing consisted of delicately traced lines, to express all the finer and more delicate gradations which were before impracticable. The method employed was that the artist outlined on the plain surface of the vase, in all probability while in the clay state, the figures which formed his design. The black ground was then painted up to the outline, covering the whole surface of



Greek Vases, Fine Period.

the clay, and allowing the figures as drawn to stand out in all their vigour.

The clay was very porous, whether sun-dried or, lightly burned, and it was imperative that every line should be unbroken and complete. Thus from the necessity of the case a technical skill was cultivated which gave these Grecian artists a marvellous power over their materials.

The natural result of this growth of skill was a more refined execution and a more educated taste, which, grafted upon the artistic perceptions of the nation, gave rise to the vases of the fine period. The clay became finer in quality through superior preparation, the black ground was endowed with a more lustrous quality, and the figures were drawn with consummate skill. Doubtless the artists were influenced by the lofty ideas which inspired the masterpieces of Greek sculpture, and the high quality of the draughtsmanship on the fictile wares is evidently owing to the excellent standard of criticism which prevailed.

It is the way of the world that one school after another arises, touches its zenith, and declines, and to this Greek pottery was, alas! no exception.

Extravagance and luxury led to the undue elaboration of details and ornaments, and the consequence was a rapid deterioration in quality.

Various imitations of the best work succeeded in some cases, the red figures being painted in opaque colour upon the black ground, and in others the red ground being similarly laid on. The art was dead, and no amount of trickery would revive it. The glories of Greek pottery had passed away for ever.

Of the extent to which these vase subjects illustrated the life of the people, their mythology and superstitions, their loves and wars, their joys and troubles, it is not possible to speak here. The subject is worthy of earnest study, and cannot fail to prove deeply interesting to any who are disposed to investigate the story of this important nation.

An account of Greek pottery would not be complete without an allusion to the beautiful little terra-cotta figures so abundantly in evidence at the present time. These Tanagra figures, so named from the place where numbers of them have been found, are believed to represent the domestic art of the period, and to be the ornaments with which the homes of the people were decorated, much in the fashion of the bric-a-brac of the nineteenth century. If this be so, it is evident that the popular conception of art amongst the Greeks was far higher than that obtaining now in Great Britain, for these figures, even when cheaply modelled and roughly moulded, convey in the most perfect manner all that is essential to beauty.

The pottery of the Roman Empire was so generally diffused amongst the countries which came under the sway of her conquering power that it is not easy to define its limits or to decide upon a classification. Although in the early days of the Republic pottery must have passed through its elementary stages, yet it seems that the best of the Roman knowledge of material and method was derived from the Greeks. It has already been pointed out that Greek work was by no means confined to Greece proper, but that it extended throughout the colonies. These reached to many parts of Italy, and thus a knowledge of the arts of Greece became implanted in that country. The Romans, as their power grew and their love of refinement increased, were not likely to allow the art of the potter to fall into decay, but they possessed only a knowledge of the outlines and not of the details necessary for the production of

perfect work. Thus it is found that, while their manipulation was excellent and their decorative ideas were well advanced, they lacked the knowledge requisite for the proper mixing of clays and for the glazing of the ware.

One of the features of early Roman pottery is the number of lamps that seem constantly to have been in use. These lamps are mostly of the low boat shape, oval, elongated, or circular, with handle and a spout for the wick. Many very beautiful embossments appear upon these, but the clay is rude and coarse. These lamps were made in moulds into which the soft clay was pressed, the moulds being divided into the necessary number of parts to permit the safe removal of the pressed piece. Numbers of them have inscriptions relating to the name of the maker, the place of origin, or other topographical subject. Dr. Birch states that these lamps were used in large numbers for purposes of illumination on triumphal occasions and during the celebration of the secular games, and that some of the subjects illustrated on the lamps themselves have reference to these uses. They have also been found in tombs, but not necessarily with any religious significance.

The Romans eventually adopted the black glazed surface so well known as the chief characteristic of Greek pottery, though they never seem, either from lack of skill or want of material, to have reached the same degree of perfection. It is probable, however, that this paved the way for their rich red glazed ware which is generally known as "Samian," though it is generally agreed that it had no connection with Samos.

Much of this class of ware was made at Aretium in Italy, and is consequently termed Aretine ; but notwithstanding the arbitrary nature of the word it may be convenient to call it Samian, as being the term most generally understood.

This ware is made of a brilliant red clay, and is coated, like the fine Greek vases, with a glaze which is so extremely thin that it has not yet been



Samian Bowl.

found possible to analyse it. The clay may have been used in its natural condition, but, as no similar clay can now be found, it is more probable that some kind of admixture was made. Clays which contain large proportions of iron are always highly fusible, and if the Romans either used a ferruginous clay, or, as some have supposed, added iron ore to heighten the colour, they must have counteracted the fusibility of the mixture by the

addition of some hardening material. This probably implies a higher knowledge of chemistry than was possible at that early period, and the assumption is that the treatment of the clay and the amount of burning that it could safely undergo were matters of experience.

Samian ware was extensively used by almost all classes. The colour was wonderfully uniform, and the decoration consisted exclusively of embossed or impressed patterns. This ware was carried wherever the Roman armies went, and much discussion has arisen over the place of origin. The uniformity of material forbids the possibility of local manufacture unless the clay were imported, but the discovery of fragments of moulds in England and Germany supports the latter conclusion.

Much of this ware is quite plain or bearing only the name of the maker, but large numbers of richly ornamented pieces have been found. The subjects consist of scenes from daily life. The chase, the games, and the household appear with elaborate embellishment of foliage and ornament, while some pieces have received a purely conventional treatment.

Another prominent class of Roman ware is that sometimes called "Upchurch," from the fact that quantities of it have been found in the marshes around that neighbourhood; but as this name presupposes the introduction of pottery into England, and thus anticipates the story, it will be more convenient to use the term "Black ware." This seems to have been made of almost any alluvial clay containing a proportion of iron, and the black colour was due to the peculiar method of firing,

which resulted in a deposit of smoke. The effect of this was that either the smoke itself penetrated the clay, or that the blackness was caused by a reduction of the red oxide of iron to the black oxide.

The decoration of this black ware may be broadly divided into two classes—that where the embellishment was produced by simply polishing the clay in bands or bars, and that in which it consisted of a series of studs of soft clay laid on with more or less regularity.



Decorated Roman Pottery.

It was not to be supposed that such a people as the Romans would be satisfied with wares which after all were rude and coarse, and evidence is available that the potters attempted somewhat higher flights. No doubt the excellent quality of Roman glass prevented there being a vast demand for fine pottery, but some endeavour was made to improve the clay-work. This improvement consisted mainly in the addition of ornament. There was no serious effort to produce grand forms, such

as had been the triumph of the Greeks, but decorations more or less florid were laid upon the clay, mostly in the manner known as slip-painted or *pâte-sur-pâte*. The method was that some white clay was worked up into a cream or "slip," and used as a paint when the vase was in a leather-hard condition. When the painting was completed the whole was fired, and the body and decoration became firmly united. Sometimes glaze was added at the same burning, sometimes at a subsequent stage.

The Roman glazes were somewhat imperfect. That used upon the Samian ware was the best, and was doubtless alkaline in composition, containing a high percentage of soda. Lead was not unknown as a glazing substance, but so far very few pieces have been discovered on which the glaze is plumbiferous. There is a distinct connection between glass and glaze, and the Romans used similar mixtures for compounding both.

To the Roman potters the world is indebted for much of its advancement in clay-work, and as the progress of ceramic art in other countries is watched, it will be found that these conquering and colonising people were instrumental in spreading very much useful knowledge.

CHAPTER II

THE NEW WORLD

THE ancient civilisations of the East had, at least to some extent, their counterpart in the West, and there are evidences that the growth of the potter's art proceeded upon similar lines. Upon the

American continents the refinement of Greece was never equalled, but, naturally, the remains of pottery tell their story as faithfully as do those of the classic powers.

North and South America were long ago peopled by numerous tribes, rising in some cases to the dignity of nations; but some of these, as for instance the Redmen of the North, rarely reached a skill higher than barbarous. In almost every part of the continent pottery was made—chiefly, it would appear, by the women, who have always filled the labourer's position amongst the Indians—and amongst the scattered remnants of what was once a great people some relics of the art still survive. Only the most menial of purposes are fulfilled by the potter's work now, though even to the present day urns are used to some extent in burial ceremonies.

The work is of the rudest character. Basket-work patterns are found impressed upon the clay, or a cord of twisted thongs has been used to give an ornamental appearance to a sunken line.

A traveller named Bartram related that in 1773 there was discovered in the State of Georgia a burial urn which was enclosed within two others. The three vessels were all treated with a basket-work design. The outer walls had fallen to pieces, but the inner jar appeared intact, and upon being carefully opened was found to contain the bones of a little child—the mortal enshrined in the imperishable.

Pottery was, in some parts, elevated to the distinction of a medium of exchange, for when it was found possible to make tobacco-pipes of clay

an immediate demand arose. The pipe has been for ages an indispensable adjunct to Indian diplomacy or negotiation. No war was declared or peace concluded, no territory was transferred or business transacted, without the pipe. To refuse it was a sign of hostility, to accept it an indication of peace. The bowl of this pipe was formed of stone, or more frequently of clay. The stem was a hollow reed, sometimes ornamented with beads and feathers. So popular did clay pipe-bowls become that they were used as currency, and consequently the quality of their manufacture gradually improved.

The decoration of vessels did not get beyond the basket patterns already spoken of, but pipes were more elaborately treated. The problem of colours to stand even the gentle fire used was not solved, for while stone pipes were gaudily painted clay pipes were ornamented with incised lines only. Some of the patterns are ingenious, but the majority are extremely simple in character, being confined mainly to diagonal scratches more or less regular.

The civilisations which existed in bygone days in America may be typically represented by what are now known as Mexico and Peru, as representing the northern and the southern continents respectively. The former comprised the portion of Central America in which the people were most advanced, the latter the great nation of South America which was subdued by the Spaniards in 1532.

The Mexicans possessed considerable skill in clay-work. Many of their temples were built of well formed though unburned brick, and the quality of their architectural work may be judged

by the well known ruins of Yucatan. Their knowledge of the art of modelling reached a high pitch of excellence ; faces formed from plastic clay are to be seen in most museums, and it will be found that the features and expression are reproduced in a manner which makes the original type live again before the observer. Their clay was good and for the most part well fired. The three-legged jar illustrated below is of a ferruginous clay which has



Mexican and Peruvian Pottery.

been blackened in the oven, and a playful fancy is revealed by the fact that a ball has been inserted within the hollow of each foot, evidently for the purpose of using the piece as a rattle. The Aztecs were familiar with the use of the potter's wheel, and they were able to produce forms which, if not equal in refinement to those of Greece nor in variety to those of Japan, were still far removed from primitive simplicity. At the same time there

is in all the work of the New World a kind of barbaric splendour which seems to indicate a rapid growth. Side by side with fine modelling is seen grotesque and meaningless decoration, almost as though two races had been working side by side. The fancy displayed in some cases is as vigorous and almost as diverse as that found anywhere else, but there is a crudity of treatment which robs the bulk of the work of any artistic value.

Peruvian pottery is not unlike that of the northern continent, except that the necessity of the case gave rise, as it always does, to certain special forms. The handled water vessel in the illustration is a typical example of a Peruvian water bottle; and it is suggested by M. Jacquemart that the object of the small opening was to prevent noxious insects finding their way into the water. A less subtle mind might imagine that it was better to be able to see the creature and avoid it rather than to run the risk of swallowing a possible intruder when drinking from the spout. The Incas made numerous forms based upon this idea; whatever its actual purport, some of them are very grotesque, and show a fancy for oddities not surpassed at the present day.

Besides the curiously shaped neck, a number of Peruvian pieces were ornamented with embossed figures having perforated eyes and mouths. The idea seems to have been that when the vessel was being filled with liquid, the air, escaping from these holes, gave rise to sounds more or less musical. Curiously enough, there was a certain connection between the figured animal and the emitted sound. Thus it is said that a vessel decorated with two

monkeys would give a screech like the monkey's voice, one ornamented with the figure of a cat would mew, and one with a bird would whistle. But a more curious piece is described by an anonymous writer, who says that a certain jar was shaped as the figure of an old woman, and when the vessel was filled with water this old lady sobbed audibly, while tears trickled down her cheeks. "Dr. Le Plongeon had in his collection a vessel in the form of a double-headed bird. This had to be filled through a hole in the bottom, and yet in turning it over not a drop would spill, but the liquid would readily flow out when the jar was simply inclined. The Peruvians were also good portraitists, and many of the faces represented might pass for likenesses of people now living on the coast."

The wide extent of the potter's art on the American continent may be illustrated by some remarks of Dr. Simeon Shaw, who states, on the authority of the *American Archaeologia*, that "the aboriginal inhabitants of Maypure in South America are celebrated for their manufacture of a species of Delft ware of excellent quality, on which are ingeniously figured and correctly painted birds, monkeys, and crocodiles. These specimens of workmanship of ancient Indians in many properties equal, if they do not excel, those of modern European fabrication. During the presidency of Mr. Jefferson persons employed in digging at Palmyra on the river Tennessee discovered and delivered to him various busts, of whose fabricators no other traces remained, though conjectured to be progenitors of the present race of Indians. The figures are almost of the natural size to below

the breast, and present good resemblances of the head, face, neck, and shoulders of persons unrecorded in tradition, but the well executed features delineate the physiognomy of the American copper-coloured Indians. The countenance of one has most distinct traits of the wrinkles of thought and age, but whether objects of idolatrous worship or mementoes of the country's most distinguished sons remains to be determined."

There are in the possession of Lord Hillsborough two Indian vases of which Governor Pownall said, "It is a decided fact that they are curious exemplars of some of the first efforts of human ingenuity and remains of what are become antiquities even among the Indians."

Dr. Shaw further states that this manufacture has been pursued by some of the Indian tribes located on the shores of the Amazon river, and that the Indians of Louisiana in his day made very durable ware, the body compounded of clay with which was mixed a proportion of calcined felspar.

From this it is evident that not only was the art of the potter widely known in America, but that the workers had arrived at an advanced stage of knowledge as to the principles of combination. As a rule savage tribes are content to use clays as they find them. It is a distinct step to be able to mix different materials for the production of a desired result. But with the march of civilisation in America these indigenous arts have almost entirely disappeared. The people might have advanced to a high manipulative skill, but that possibility has passed away for ever.

CHAPTER III

THE FAR EAST

PASSING through the continent of America and pursuing the path of the setting sun, the Far East is entered, for East and West touch each other all round the world.

From Vancouver the sun sets behind Japan, from Japan the sun rises over America. The Japanese love to call their country the land of the sunrise, for across the broad ocean there seems to be nothing between themselves and the dawn.

While touching first upon Japan geographically, it does not follow that historically pottery originated there ; in fact there are strong evidences that the Japanese potters learned their art from the Chinese, and that the knowledge reached them, to some extent at least, by way of Corea.

The Chinese Empire is rightly regarded as the great home of porcelain, which is the highest form of the potter's art. All articles made of clay, from bricks to statuettes, are pottery ; porcelain is therefore included ; but as a special substance a narrower definition is required. Porcelain has three particular features : it is hard, white, and translucent. The first, hardness, may be understood in two ways—hard as related to the fire, *i.e.* refractory, and hard as regards the power of resisting wear and tear. The former is the meaning generally used by the potter, the latter by the public. The other two terms are relative : some porcelains are not absolutely white, some scarcely translucent ; but

wherever these three features are found in a single example, that piece may be safely described as porcelain.

The substance had its origin in the Chinese Empire, and from this fact is derived the name "china-ware." The time of its birth is a matter of conjecture, but is certainly prehistoric. Chinese legends state that the art was known prior to B.C. 2000, but this cannot be demonstrated. There is no doubt that the Chinese began to work clay much as other nations did, but before long Kaolin, or porcelain clay, was discovered, and thus the first important step was taken. There are traces of dark-coloured ware with opaque enamelling having been produced, but the employment of white clay rendered the enamel unnecessary, as a transparent glaze could now be used. Very early in their ceramic history the Chinese began making coloured glazes, sometimes laying the colour under the glaze, sometimes mingling it with the glaze itself. These glazes formerly went by the name of celadons, but now this term is generally understood to refer to the dull green glaze only. The fire had great influence upon the tint—in fact it may be said that all these colours owe their beauty to the peculiar action of the fire. It is probably on this account that no Western potter has succeeded in rivalling the Chinese work—in fact the art has long ago been lost by the Celestials themselves.

The paste upon which these old celadons have been fired is not white, but it is intensely hard and has evidently undergone a severe heat. The pieces are so thick that there is no possibility of

testing the translucency of the ware, but it should perhaps be classed rather as stone-ware than as porcelain. One of the very early feats of these potters was the production of the crackled glaze which came to be regarded as a decorative feature. There is a great difference between this crackle



Chinese Porcelain.

and the crazing which appears as a defect upon modern cheap earthenware. The former is regular and permanent, and is, moreover, evidently under the control of the maker ; the latter is uncertain and vexatious, and usually appears when it is not wanted. Crackle depends upon the mutual relations between body and glaze, and the marvel

is that it was found possible to so adjust these relations by minute variations in composition as to produce a large or a small crackle at will. The effect was often heightened by the addition of colour to the cracked lines, and upon the diaper groundwork thus produced it was usual in later times to add a design more or less elaborate. The earlier pieces rarely have such additions, but the crackle is frequently made use of on embossed shapes which do not need any further decoration.

Mr. James A. Garland, a noted American collector of Chinese porcelain, has gathered some important information as to the periods at which the various fine works were made, and gives it as his opinion that white porcelain became an established fact during the Thang dynasty (A.D. 618—907), though there had been various attempts before this to bring it to perfection. The Chinese call their ware "yao," a term meaning an object burned in a kiln, whether pottery or porcelain.

It was the Emperor Chi-tsong (A.D. 954) who issued the well known command that the imperial porcelain should be of the colour of the sky after rain, a tint doubtless peculiar to the Chinese climate, as the cobalt used is not capable, at least in European hands, of producing anything like a "sky-blue" as understood in England. This porcelain, named Tch'ai-yao, after the family name of the Emperor, was greatly valued, so much so that even broken fragments were in after years set in gold for use as personal ornaments.

During the Sung dynasty (A.D. 960—1260) greater advances were made, and most of the archaic specimens existing to-day were produced then.

Some of these bear an unmistakable mark of extreme age, and as porcelains go they are veritable patriarchs. The celadons of this period are particularly fine, the rich and mellow colouring of the glaze being relieved by quaint embossments and undulations. Very soon the Chinese potters began



Chinese Blue and White Porcelain.

to play tricks with their materials, and as their skill increased they gave full play to their fanciful imaginations. The most remarkable series of successes are found in what are now known as single colours. These are very numerous, and for each the Celestials found an appropriate and poetical name, such as "the moonlight," "the blue of the

prune-skin," "the violet of wild apples," "the red of the bean-blossom," and "the liquid dawn." These were followed at later dates by others too numerous to mention, and each potter strove to excel his competitors and to produce new combinations.

It was, however, under the great Ming dynasty (A.D. 1368—1648) that the manufacture of porcelain received its greatest impetus. The successive emperors seem to have warmly patronised the potters, and under their fostering influence great results were achieved. The cobalt blue was developed and beautified, becoming so important a feature in Chinese work that it was imitated as a matter of course by the early European experimenters.

During this period the famous Lang-yao (porcelain by Lang) was made. This has been named by collectors *Sang de Bauf*, on account of the rich glow of the red colour. Many attempts to reproduce this particular tone have been made, but so far with but little success. The colour is dependent upon the oxide of copper introduced in small proportion into the glaze. This is then fused in such a chemically constituted fire that the copper is reduced to the metallic state which in minute division imparts the brilliant colour. The Lang family were most successful in this particular ware, and their name will be handed down to all futurity in connection with their porcelain.

Towards the close of the Ming dynasty there was incessant war with the Manchou Tartars, who eventually succeeded in establishing themselves upon the throne, which they have occupied ever

since, and during these disturbances the manufacture of porcelain was neglected. Many of the kilns were destroyed and family secrets lost, but upon the country becoming settled under the conquerors the work was again taken up. Experts are not entirely in agreement as to whether the finest enamelled porcelain was begun before or after this conquest. Jacquemart places the famous styles, which he has classed as *famille rose* and *famille verte* respectively, under the Mings; others believe them to be of later date. Both treatments are finished upon the glaze at less severe fires than that undergone by the glaze itself. The feature of the green family is a brilliant lustrous green enamel produced from oxide of copper. This is transparent, and allows the black tracing underneath, with which the details of the work are elaborated, to be perfectly seen. Sometimes the black is used so extensively as to predominate over the green. The black is evidently a dense infusible paste, becoming glazed by the green, which entirely covers it. Sometimes the surface of the combined colours assumes a slight iridescence, giving rise to the term "ravenswing black."*

The rose family is distinguished by the lavish use of an opaque rose-coloured enamel which sometimes covers the backs of plates and is also the leading tone in the colouring of the design. In this much depends upon the purity of the

* We are fully aware that in many excellent works this black is spoken of as a black *enamel*, but a careful examination of numerous specimens has convinced us that the above explanation is correct.

colour, but almost every conceivable tint of pink seems to have been used. The colour was made from gold, and it is not unlikely that the discovery of the tint originated the style. The leading Chinese ceramists were remarkable both for the purity of form displayed in their works and for the marvellous variety and perfection of their decorations. These qualities were lost in later years, and the Tai-ping rebellion seems to have extinguished the last spark of excellence. China still makes large quantities of her wares, but their glory has departed. The bulk of modern productions are either for domestic use or to meet the demand of a foreign market ; in each case the incentive to produce fine works is absent, besides which the potters of ancient times had incomparable skill and indomitable patience. The latter is to some extent possessed by all Celestials, but the former appears to be irretrievably lost.

Very early in the history of mankind kindred nations began to borrow from the Chinese. It has already been shown that the art of clay-working arose spontaneously in many countries, and while this is true of the crude and untaught method, it cannot be maintained of the higher flights of fancy and skill. China undoubtedly led the way in porcelain, as Greece in pottery, and besides this there is nothing to show that the Chinese were ignorant of coarse pottery at the same period as it was being so successfully worked by the Greeks. The presumption is that at the fine period of Grecian art the Chinese were at least familiar with the power of shaping and firing clay, which laid the foundation for their later achievements. From

China then the knowledge spread, and, receiving in each new country a local character and definition, the clay-work was created which now reveals so much to the student.

The Japanese learned how to work clay as early as 600 B.C., but there are very few, if any, pieces as old as this in existence. Some ancient works have been discovered in tombs, but burial of vases was not a usual practice, and it is manifestly impossible to fix an accurate date. Very early pieces, however, show the national character in free and fanciful treatment; the workers even then seem to have been absolutely unconfined by conventionality, and to have been at liberty to indulge to the full their passion for variety.

The Japanese themselves attribute some of their knowledge to the influence of the Koreans, but so far any work emanating from Korea has been found to be very crude in character. There is evidence, however, of a similar play of fancy, or what may be termed love of accident, as in the bowl illustrated on page 53. Here the enamel has been allowed to run into drops apparently accidental but an integral part of the piece nevertheless. This bowl is Korean in origin, and serves to show the crude solidity which afterwards gave way to the light fancy of the Japanese.

It was about A.D. 200 that Korean potters settled in Japan, and gave a considerable impetus to the production of clay-work. Their tea-bowls were much in demand, as in the quaint tea-ceremony which prevailed for many years the bowl and water-jar were handed round for inspection. This fact, of course, inclined the host to procure fine

specimens, and stimulated the potters to supply them.

In the sixteenth century an important colony of Corean potters was formed at Satsuma, where the well known ware of that name was made. The characteristics of this pottery are a creamy yellow body and a clear finely crackled glaze; later, rich-coloured enamels were added, possibly to satisfy a popular demand.

Sir A. W. Franks divides Japanese pottery into three classes: 1. Common pottery and stone-ware; 2. Cream-coloured faïence; 3. Hard porcelain. Each of these may be said to be capable of subdivision, but, broadly speaking, they cover practically the whole ceramic productions of the country. To the first division belong the unglazed and ruder wares, though the taste and workmanship displayed in these is often of the highest quality. Some of the thumb-moulded pieces are marvels of technical skill and refined taste, showing, as no other works have ever shown, how much can be done with insignificant material. The effects that a Japanese modeller can produce with a piece of clay and a simple tool are calculated to astonish the Western artist. The seated figure in the illustration is an example of this.

The second division includes the Satsuma ware already spoken of, as well as many other kindred productions. The essential conditions are a clay body, opaque and usually coloured, with a soft glaze. Porcelain, of course, has a pure white translucent body and a very hard glaze.

To the Japanese love of Nature and devotion to her varying moods were due the wonderful

variety of the forms and decorations which they produced ; they took full advantage of the plastic quality of the clay, and a Japanese potter never seemed to repeat himself. But while this was true of the old days, before the debasing influence of European demand overruled the finer instincts of the workman, it can scarcely be maintained of the bulk of modern Japanese work.



Japanese Pottery.

The progress of Japanese pottery was due to a large extent to the patronage of the nobles. Many princes had their private potteries, being in this no exception to the rule which prevailed in Europe during the eighteenth century. The desire of the potters to please their patrons no doubt led, in large measure, to the variety already alluded to, and added to this was the fact that the patrons themselves were keen judges, and well versed in the canons of art, which rule in Japan as nowhere else in the world.

For the secret of porcelain manufacture Japan is indebted to the Chinese (Franks). In 1513 one Gorodayu Shonsui of Isé came back from China and settled in the province of Hizen. He



Imari Vase.

proceeded to manufacture porcelain after the fashion of the Chinese, but used only a simple blue decoration. Some time after red and gold were introduced, being used principally at one

factory at Imari, where the porcelain known as "Old Japan" was made. This, it is said, was first made in 1641 for exportation to China, and was afterwards re-exported by the Dutch to all parts of Europe (Franks). The origin of the particular style of these vases is a mystery; it is not Chinese, and the large pieces were evidently not made for Japanese use.



Japanese Porcelain.

In porcelain, as in pottery, the Japanese were soon able to perform wonders of technical skill. They delighted in elaborate tricks which were calculated to exhibit their power. Some of the pierced ware manufactured at the present time is most accurate in execution, and could hardly be equalled by any other potters. The porcelain known as "grains of rice" is a modification of this. The piercings are not so large as in the

honeycomb ware; they are disposed in fancy patterns and do not cover the whole of the piece. When the perforations were completed each was filled with a drop of translucent glaze, which, on fusing, imparted an exquisite lace-like effect to the work. A similar result was achieved by the Persians in their "Gombroon" ware, *q.v.*

The Japanese in their decoration of porcelain made great use of the cobalt blue so extensively employed in China, but they also utilised every colour which they were able to produce. Their rendering of natural objects remains unsurpassed, and European artists owe much to the spirit and poetry which breathes in the art of Japan. Soon after the rage for Japanese goods which arose about 1875, the commercial demand to which allusion has already been made was developed; but since that time certain of the Japanese ceramists have seen the error of their ways, and are now striving to emulate the fine works of the past. They are also doing more. Recognising that the finest porcelain of the world was produced in the Chinese Empire, they have set before themselves as ideals the glorious examples of the fifteenth and sixteenth centuries, and are pressing hard upon the heels of the great Chinese masters. That their skill and pertinacity may bring them success is to be earnestly hoped.

In the peninsula of Hindustan the domestic potter has been an institution for ages. Upon the outskirts of every village lies the potters' field, usually a waste and desolate spot, and there is a considerable demand for the common wares which are used to contain food and water in the household.

But the potter's art in India is in a state of degeneracy. There was a time when pottery and even porcelain of high quality was made. Hindu writings of the ninth century B.C. make constant mention of earthenware, and following upon this came the knowledge of enamelling and eventually of the manufacture of white porcelain. The art doubtless originated in very crude and imperfect work, but the Hindus were extremely clever in all decorative treatment and could not long have



Indian Pottery.

remained in ignorance of the possibilities of clay. The potter's wheel seems to have been in use some centuries before the Christian era, early specimens having been discovered which are evidently wheel-made. It is the use of a silicious glaze, however, which gives to Indian pottery its greatest interest, for it is probable that here was developed the knowledge which eventually spread westward. Though in Egypt and Babylon glazes were known ages before, the art slumbered in

obscurity, if it did not entirely disappear, until awakened by the Orientals. While China devoted herself to porcelain, India pursued faïence, and though she has been far outstripped by Western nations, there are specimens in existence which are models of excellence to-day.

In the early stages Indian pottery was simply decorated with incised lines, but when the glaze was adopted and the ware began to assume a more ornamental character colours were introduced. The Indian potters had a happy knack of combining colours laid under the glaze with a tint imparted to the glaze itself; thus a turquoise glaze will be found superimposed upon a dark blue decoration, or a green arabesque will be overlaid with a pale brown glaze, thus producing the most pleasing combinations of colour. Notwithstanding the crude and imperfect quality of the work of the modern potter in India, there is, especially in the north-west, a distinct school of native work which is most artistic. Extending from Bombay to the Afghan frontier are groups of potteries of small extent where work is produced much upon the ancient lines. The fine turquoise glaze with which the well known Mûltan tiles are covered almost equals the early Egyptian in quality, and there are in various directions signs that a revival is approaching. The Indian artists have shown themselves very clever in figure-modelling. Numbers of small statuettes may be seen, illustrating the habits and dress of the natives, which are most lifelike and indicate that the makers possess great aptitude for clay-work. It is a matter for congratulation that in some of the Government art

schools, notably in that of Bombay, an endeavour is being made to revive the best traditions of Indian Ceramic Art.

CHAPTER IV

THE NEAR EAST

IN tracing the history of pottery through successive stages and through various lands, it will not be necessary to state that the primitive steps must in every case have been taken. Pottery is understood as having become, by universal consent, classified, not only into countries, but into types. Thus in speaking of the fictile productions of what may for convenience be termed Mohammedan lands, it is understood that the special feature of enamelled earthenware is that more particularly meant.

After the fall of the Roman Empire but little trace remained of the arts practised in the times of her prosperity. Such knowledge as that possessed by the potter cannot absolutely pass away, but so much of this knowledge is special and detailed that it is not a matter of wonder that both Greek and Roman art disappeared. Perchance some lingering traces of the art of enamelling had filtered through from Egypt, and had been enshrined in some ancient family tradition; perhaps some caravan from the Far East had brought information from the Punjab. Whatever the source, it is a fact that as early as the twelfth century enamelled wares were well known.

Damascus has been called the oldest city in the world, and there is no doubt that it was at one time the seat of many of the arts. Not all

the ware named after the place was produced there, but the type was largely identified with the city.

It would almost seem as though the enamelling of pottery in Syria and Persia derived its inspiration from a building rather than from a vessel. Mud houses were, and are, common. The decoration of the interior of these houses could not have been a matter of indifference, and the idea of beautifying a wall would be more natural than that of ornamenting a jar. Besides this, the evidence from enamelled tiles is stronger than from enamelled vases, though this may be accounted for by the greater resistance offered by the former to the ravages of time.

It has already been mentioned that the Egyptians found it necessary to use an open sandy clay for the purposes of glazing, and this discovery was also made in Persia. The nature of the body used in all primitive enamelled ware is very similar. A porous mixture was the only one which would retain the alkaline glaze on firing, and at this early period lead had not been introduced to any important extent. The fire needed for this ware would not be severe, and it is quite likely that body and glaze were burned at one and the same time. The material used for the paste was nearly white and did not at first need an opaque glaze, but when ideas advanced whiter ware was demanded. This was first met by a coating of white sand, ground fine. Such a substance could not by any means be moulded into a body, but there was no difficulty in covering the already formed ware with it. The trouble would arise in the burning, when the silicious coat would be apt to scale off.

Certain colourings were, under this treatment, developed as they could not otherwise have been. The deep blue of cobalt was of course the mainstay of the potter here as elsewhere ; this was not appreciably affected by the composition of the glaze, but, like the Ancient Egyptians, the Mohammedan potters discovered that their soda glaze was ad-



Persian Ware.

mirably adapted for producing from copper a beautiful turquoise tint.

Some of the Persian wares are so fine in quality as almost to merit the term "porcelain," especially a class of work known in the seventeenth century as "Gombroon ware."* The feature of this consisted in fine perforations which were filled in with

* "This Gombroon ware was that made in Persia itself, which was shipped from Gombroon, a port in the Persian Gulf."—CHAFFERS.

the transparent glaze. The small bowl illustrated is an example of this ware, which is considered by M. Jacquemart to rank as soft porcelain, and to have been so ancient as to have suggested to the Japanese the production of the "grains of rice" porcelain.

Persian ware is mainly decorated in sombre colours. A fine black outline is commonly used, and the transparent colours, mainly blue, green, and a delicate purple, laid over this. The fine quality of the glaze and the artistic excellence of the work give to this ware an appearance of great refinement.

What is more generally understood as Damascus ware is bolder in character. The influence of the Mohammedan faith is apparent in the entire absence of animal form from the design.

The composition of line and colour in these works is usually most satisfactory, and the balance between surface and decoration is remarkably well preserved.

The silicious glaze favoured the method of decoration by under glaze colours, and the forms used were mostly evolved from the necessity of providing for domestic wants. The numerous dishes were required for the service of food, and the well known ewer and basin for rose-water were necessities where table utensils were unknown. The custom of pouring water over the hands of each guest after a meal led to fine works of art being used and greatly stimulated the production. In like manner the sprinkler for perfume and the base for the hookah or water-pipe were demanded in beautiful ware, and many of these

pieces are found in museums at the present time. Damascus ware has never risen to the quality of porcelain, though some of the finer specimens of faïence almost merit the term. The quality is, however, only upon the surface—skin-deep, as the proverb says—while the excellence of porcelain exists throughout the whole of its substance. This



Damascus Ware.

ware can only have sustained a very moderate fire. The colours themselves are evidence of this, as some of the tints would have been completely destroyed at a severe heat. It was, after all, only necessary to consolidate the clay ; translucency was not possible, and it is the attainment of this feature which renders a high temperature imperative in the firing of porcelain.

In addition to the simple colours used upon the wares already mentioned, there was employed, especially by Rhodian potters, a fine red which is the marvel of all who understand the difficulties of the case.

M. Jacquemart states that this was a red clay which now goes by the name of Armenian bole; but it was not the clay alone which enabled the colour to be developed. There were several important conditions to be fulfilled. The red colour was only possible when the clay was laid on in thick masses, and this, added to the fact that the body of the ware was very different from the colour in nature, caused great liability to cracking and peeling. To obviate this it is evident that from time to time some ground quartz was added to the red clay, giving it a much lighter tone, approaching in fact to a pink. This was especially the case when it was desired to coat the whole piece with the colour. Then the peculiar red tint could only have been produced with the particular alkaline glaze which was the leading feature of these Oriental wares, so that all the circumstances of the case seem to have contributed to a result which is unique in the history of ceramics. The nature of this colour can be verified by any one who will take the trouble to examine a specimen. The solid body can easily be felt and the earthy quality is quite perceptible.

This red is found to be very cleverly combined with the blues and greens, and these colours, owing to the fact that they are disposed to flow under the influence of the glaze, afford an excellent foil to the firm solidity of the red.

Pottery was doubtless made in Rhodes before the Christian era, but there is no trace of enamelled work at anything like this early date. M. Jacquemart states that the art was conveyed from Persia by a fortuitous chain of circumstances. The Knight of Rhodes captured a vessel in which was not only a cargo of Persian ware, but also a number of workmen who were familiar with the



Rhodian Ware.

process of manufacture ; these artisans were forced to make pottery in captivity, and the learned Frenchman professes to recognise the features of the work produced under these conditions.

An additional argument is deduced from the ware itself, in that "Rhodian pottery is Persian faïence of an inferior order." Whether this be true or not, Rhodian ware speedily developed a marked character of its own, and was largely

exported to other places. The term "Rhodian" has in fact become a generic name for all pottery of the particular class above mentioned, but is usually almost confined to examples upon which the special red appears.

Much of the ware was made at Lindus, where there have been discovered the remains of ancient furnaces.* The finest specimens were produced during the fifteenth and sixteenth centuries, but before this period the knowledge of the art had spread not only along the northern coast of the Mediterranean, but southward through Syria and westward amongst the Moorish tribes in North Africa.

Of Arabian or Saracenic pottery some few fine examples remain, notably a beautiful lamp in the British Museum, which came from the Mosque of Omar in Jerusalem. This piece is surrounded by an Arabic inscription, and bears a date corresponding to A.D. 1549. It is executed in the Damascus style, no red being used. The workmanship is very fine, and both paste and glaze show that great care was exercised in the manufacture. The colours are, mainly, deep blue and greenish turquoise, the tone of which suggests that some lead was used in the glaze.

This Arabian work formed the stepping-stone between East and West, for the connection set up by Moorish trade, with the Arabs on the one hand and the Europeans on the other, led to the introduction of enamelled earthenware into Spain. The details of progress in the latter country must

* "Maiolica," by C. Drury E. Fortnum, F.S.A.

be postponed to another chapter, but it will be well to point out here that the way had been prepared by the adoption of an opaque glaze in the East. The development of this took place in Spain and Italy, but the idea originated with the Arabs. Glaze rendered opaque by oxide of tin was known to the ancients, as is evident from existing specimens, but they do not seem to have worked the idea to any great extent.

It has already been pointed out that in Persia and India a white flinty coating was used under a clear glaze, but the effect of the oxide of tin was to render the glaze itself white and opaque. Combined with and doubtless related to this discovery was the employment of lead as a flux, and these two substances rendered unnecessary both the sandy body and the silicious coating. The potters were enabled to use a cheap plastic clay, and the worst of the technical difficulties were overcome. The advantage from a maker's point of view can hardly be over-estimated, but the artistic value of the work was to a great extent lost. With a white coating upon the clay and a clear glaze the colours assumed the luscious quality which makes them unique in the treatment of ceramics. Substituting for the silicious surface an opaque glaze, the possibility of under glaze colours disappeared, and, besides, the use of lead in the glaze destroyed some of the most beautiful tints.

The invasion of Spain by the Moors in 1235 transferred the scene from Africa to Europe, and the story must now be taken up nearer home.

CHAPTER V

EUROPE AND THE RENAISSANCE

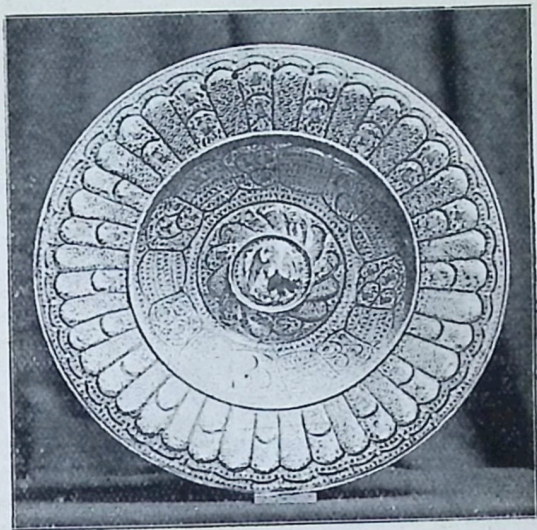
FOR many years there was a general opinion amongst experts that the revival of European pottery began in Italy, a view which was supported by the fact that nearly all the existing specimens of enamelled wares had been discovered in that country.

On the other hand, the name "Maiolica," given by universal consent to these enamelled wares, indicated that their place of origin was the island of Majorca. More recently the view largely taken is that the knowledge of the manufacture was brought into Spain by the Moors, who also settled in the Balearic Isles and there practised the potter's art, and it has now been demonstrated that a number of the pieces found in Italy are of Spanish origin.

The close proximity of the coast of Spain to that of Africa rendered communication between these countries a simple matter, and when the power of the Arabs extended to the western limit of the Mediterranean, the invasion of Spain was too tempting to be resisted. In the eighth century the Mohammedan power was established at Cordova, and five hundred years later the Moors, driving out the Arabs, founded the kingdom of Granada and built the famous Alhambra.

In a previous chapter it has been stated that the Arabs and Moors were familiar with the art of enamelling, and had succeeded in the employment

of tin to produce an opaque glaze. When therefore their knowledge was introduced into Spain, they found abundance of tin ready to their hands. Upon this it is evident that they entirely abandoned the silicious coating on the body and



Spanish Dish.

the clear alkaline glaze, devoting themselves to the enamel exclusively.

Of the Hispano-Arabic pottery, Mr. Drury Fortnum states, there is no accurate knowledge, but of Hispano-Moresque numerous examples remain. The tin enamel is of great beauty, and

an important feature is made of coloured lustres. A notable specimen is the famous Alhambra vase. Mr. Litchfield states that he saw this vase in 1889 at the Palace of the Alhambra, and that the colours of the decoration are a pure blue enamel with a gold lustre on a white ground. The story of this vase is interesting, and is given by M. Jacquemart as a dialogue between a stranger and a Granadian.

In brief, the facts are that three vases full of treasure were found in a garden at the Adarves. The Marquis de Mondejar secured the treasure, and expended it, or a portion of it, in laying out the garden in which he placed the vases. First one and then another of the vases was broken, and the pieces were carried away as mementoes, when the third was rescued from a like disastrous fate. This vase was accurately copied by the late Theodore Deck of Paris, and the copy stands in the Museum at South Kensington.

The splendid lustre upon these wares was very early esteemed, for one Ibn-Batoutah of Tangier, who wrote in 1350, stated that "at Malaga the beautiful golden pottery is made which they export to the most distant countries." This exportation doubtless laid the foundation of the industry in Italy, and led to the "Italian Maiolica," which everywhere became famous.

The development of the potter's art in Italy was in great measure due to Luca della Robbia, who was born in Florence in the year 1400. He was trained as a goldsmith, but devoted himself eventually to sculpture. It is said that his desire to render his bas-reliefs impervious to moisture

led him to think of burning and glazing the clay. At the same time it is probable that he had learnt from the Moorish potters something of their methods, which he adopted and extended. His first important work was finished in 1438, and this was followed by numerous fine reliefs, which were intended mainly for architectural embellishment.



Italian Maiolica.

In the South Kensington Museum there are, amongst other works of his, a series of plaques or medallions representing the twelve months. The subjects are taken from peasant-life, and are painted in monochrome. Luca della Robbia executed many important works, but the feature of his productions was modelling rather than painting. The enamels he employed were very pure and hard, but, except for the advantage

of durability, sculpture gains nothing by being overlaid with a shining surface. He was succeeded by his nephew Andrea, who maintained the traditions of his name.

The art of enamelled terra-cotta was pursued at many different centres in Italy, and being taken up just as the tide of the Renaissance was beginning to flow, many of the leading artists devoted their attention to it for at least a short time. Mr. Drury Fortnum states that "the choicest works in Italian pottery were produced during a period which extended from 1480 to 1520 or 1530; thence until 1560 was its meridian," and from this date the quality of the work speedily declined. It is not easy to determine the sequence in which the various towns took up the work, but there is a general agreement as to the relative importance of that produced at certain places.

Pottery was made in Faenza as early as 1475, and it is from this place that the term "faïence" is derived. The work produced here was perhaps the most important in all Italy, and numerous pieces are extant to testify to the skill both of the potter and of the artist. The painters of the period were doubtless charmed to have at their disposal a pure vitreous surface upon which the finest touch would tell, and a palette of colours which, if limited in number, were imperishable. An important addition to this palette was, however, found when at Pesaro, on the Adriatic coast, the metallic lustres were produced. It has been already mentioned that lustred wares were exported from Malaga in the fourteenth century, and it is not impossible that to a seaport town

some of these wares may have come. In any case Pesaro seems to have been the first centre for the development of lustres in Italy, and by means of this new treatment some most beautiful results were obtained.

The work at Pesaro has been brought into notice by the writings of one Passeri, who lived in the eighteenth century. He was an antiquarian and a connoisseur, and, being jealous for the honour of his native town, laboured to discover all that could be known about its work.

Urbino was a famous centre, and is still more notable for having been the birthplace of Raphael, who himself appears to have designed for pottery, if he did not actually paint upon it. Here were to be found, in the height of the prosperity of Italian art, nobles and artists, patrons and producers. Nothing was wanting in the enthusiasm with which new successes were hailed, and the results are treasured to-day.

Not painting alone, but elaborate modelling, enriched by the application of glowing colours, engaged the attention of the artists and opened the purses of the wealthy. A magnificent salt-cellar figured by M. Jacquemart is an example of the perfection to which modelled work was carried, and in every good museum may be found specimens of the same style.

Gubbio has been rendered immortal by the magnificent works of Giorgio Andreoli, better known as Maestro Giorgio, who devoted himself to the perfecting of the coloured lustres previously used at Pesaro. He particularly favoured a red lustre made from copper, while also using the

yellow of silver and the simple iridescence of bismuth. Some fine pieces of his work are in the Museum at South Kensington.

In the library of the same Museum is an interesting manuscript by the Chevalier Piccolpasso, who about 1550 was engaged in making pottery at Castel Durante. This work is descriptive of the manufacture and decoration of maiolica, and is illustrated by sketches. The wares of this place have been largely merged with those from other parts of the duchy of Urbino—in fact it was the Duke of Urbino who was the great patron of the whole of this district.

It is not possible to give an exhaustive account of all the centres of production in Italy. Siena, Diruta, Caffagiolo, Ferrara, Naples, Genoa, and other places were more or less interested, but the variation in the different works is in some cases so slight that it is only a matter of interest to experts.

The pieces executed by these Italian workers were in many cases intended for decorative purposes. The plaques commonly have holes for convenience of hanging, and some vases were certainly not made for use; but great care was also bestowed upon drug-pots, as well as upon pieces for table use. The palette of colours was undergoing a gradual change. Having lost the pure under glaze colours of the Orientals, experiments were made and new tints provided; but the convenient use of lead in the glaze gradually reduced the permanent colours to blues and yellows, and in the later examples these tints are found to greatly predominate. When, therefore, early in the seventeenth century, the importation of Chinese and Japanese

porcelain was largely entered into, the Dutch, who were the leading mercantile people, adapted their pottery to Chinese ideas, and, dropping the yellow entirely, confined themselves to the use of blue in their decorations. The town of Delft was the centre whence most of these goods emanated, and from this name arose the term, sometimes spelled "delph," by which common pottery is now known



Delft Ware.

in some parts of England. The Delft ware had most of the characteristics of Italian maiolica, except that blue was at first almost the only colour used. The opaque glaze was very good, the surface being even more brilliant than that of the Italian wares. This may be accounted for by the fact that, retaining for decoration the blue, which is absolutely indestructible by heat, a much more severe fire was possible, and this gave to the glaze

its brilliant surface. The manufacture of pottery in Delft reached the height of its prosperity between the years 1650 and 1680, and during this period there were a large number of potters at work. The leading artificers of the town were banded in a society called the Guild of St. Luke, and great care was exercised lest unauthorised persons should take part in any trade or manufacture. Examinations were held periodically for the admission of new members, and this doubtless had the effect of maintaining the artistic productions of the town at a high level. M. Havard has published a most exhaustive history of the Delft potteries, and has given from the ancient archives of the town complete biographies of the principal workers (Chaffers).

In a recent paper read before the Society of Arts Mr. J. W. L. Glaisher gives the following interesting account of the process by which Delft ware was made:—

“The clay was thrown or moulded in the ordinary way, and submitted to a first firing. The article was then dipped in a white liquid, the dense matter in which formed a coating to the body of the earthenware. The painting was effected on this white porous substance. The article was then covered with a transparent glaze and fired again. In the second firing the white coating and the glaze were both fused, the former becoming a white enamel, generally of a milky hue, and the latter a thin layer of glass.

“Both firings took place in the same kiln, but a higher temperature was required on the second firing to fuse the enamel. The articles in their

raw state were placed for their first firing at the top of the kiln, where the heat was less.

"The clay in its biscuit state after the first firing was very absorbent, and when dipped into the liquid rapidly drank in, so to speak, the water, leaving behind upon the surface a white coating of solid matter. In order to paint upon this spongy substance, which may be compared to blotting-paper, very great dexterity as well as suppleness of hand was required, which could only be gained by early training and long practice. The difficulty was increased by the nature of the paints, which were formed of a mixture of the colouring matter, itself very fluid, with pure water, without the addition of gum or any other substance to give cohesion.

"On account of the excessive 'thirstiness' of the ground and the very liquid character of the pigments, the artist had to manipulate his brush with great skill and quickness, for the least delay or hesitation on any spot caused too much of the colour to be absorbed there, and spoilt the piece.

"It is clear that painting executed upon so uncongenial a substance could not be very accurate or exact in detail, but the boldness and vigour imposed by the conditions gave to the finished work a special character and charm which were quite its own. Patience and care were not the qualities required in the artist, but there was ample scope for the display of originality and dexterity, and in spite of the difficulty of working upon a spongy and absorbent surface, effects could be produced of the most surprising delicacy."

On following the story of the production of

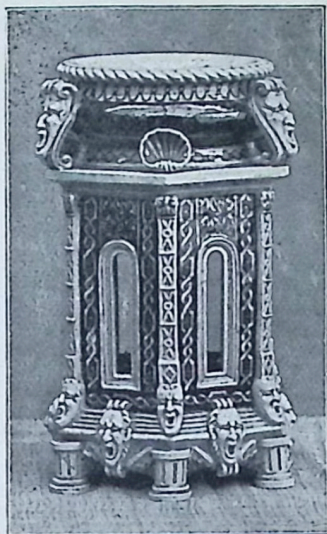
faïence in France, a break in the continuity of tin-enamelled wares is necessary in order to look back at two important departures of earlier date. These are the ware called "Henri Deux" and that made by Bernard Palissy.

Mr. Chaffers states that the faïence which went by the name of "Henri Deux," and subsequently by that of "d'Oiron," should be called, in accordance with the opinion of M. Edmond Bonnaffé, "Saint Porchaire," there being strong evidence that it was made at that place. The date of production is believed to have been about 1524, and the ware itself is quite unique. The body is a creamy white, and the decoration is effected by inlaying fine lines and panels of darker coloured clays, the whole being covered with a clear soft glaze. Mr. Chaffers carefully compiled a list of the known pieces, and found, curiously enough, that England and France possess twenty-six specimens each, only one other being in existence, in the collection of a Russian prince. It will thus be seen that this faïence is extremely rare, and consequently very valuable, the fifty-three extant pieces being worth an aggregate of some £28,000. This ware has been faithfully copied by Messrs. Minton, one of whose small specimens is illustrated.

Bernard Palissy was born in 1510, and in 1539 he married and took up his abode at Saintes. He seems to have been trained as a glass-painter, but upon being shown a cup of enamelled earthenware he was seized with a desire to produce similar things.

He had no knowledge of the method of procedure, and began, to use his own words, "like a man

groping in the dark." His difficulties were enormous, and would many times have defeated a less courageous man. To a scolding wife and a hungry family were added suspicion on the part of his neighbours and persecution by the Church, for



Copy of Saint Porchaire Faïence (by Minton's Limited).

Palissy had found time to vigorously proclaim his adherence to the Huguenot cause. His enthusiasm for his art led him to seize upon his scanty furniture to supply fuel to his furnace, and at length he attained success. His name will be

handed down for ever as that of the self-taught potter, and his works will always adorn ceramic collections both public and private.

Palissy devoted himself, in the main, to rustic models; many of his objects were evidently moulded from nature, and the coloured glazes which he employed were beautifully rich and pure. His work is devoid of the opacity which distinguishes,



Palissy Dish.

and as some think disfigures, that of Luca della Robbia, but instead there is a pellucid transparency as of pebbles seen through water. All his productions are, however, not of this class. He executed some fine pieces with figures modelled in relief, and also some beautiful perforated dishes. His religious opinions led to his imprisonment in 1562, but he was liberated by the intervention of the Constable de Montmorency, who succeeded

in 'obtaining for him' a place at court. He removed to Paris about 1564, and was engaged to work for Catherine de Medici. He erected rustic grottoes in the gardens of the Tuileries, but these have unfortunately been entirely swept away. Palissy was betrayed in 1588, and consigned to the Bastille, where he died in 1590.



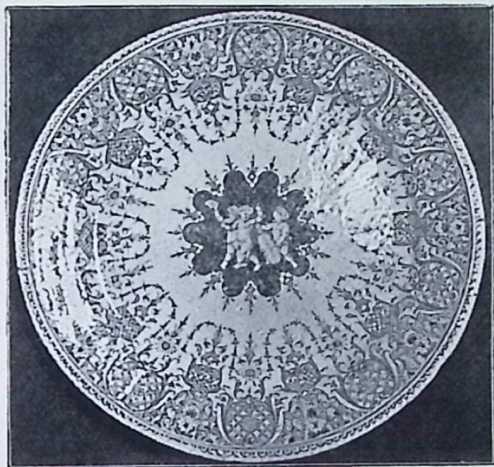
Nevers Faience.

The succession of tin-glazed wares was resumed in France about the year of Palissy's death, when the Duke of Nevers invited to that place a number of skilled artisans from Italy. One of these, by name Gambyn, was a potter, and probably a native of Faenza. There is a difference of opinion as to whether or not he made the first pottery at Nevers, but there seems to be little doubt that he introduced the art of enamelling and developed

the production on Italian lines. Not that there is anything in common between the wares of Faenza and Nevers beyond the use of tin in both cases; for the French artists, recognising, as did the Dutch, the unsatisfactory behaviour of all colours except the cobalt blue, devoted themselves mainly to this colour. And here a curious and interesting variation is noticeable. The Delft makers, evidently with Chinese models before them, used blue decoration on the white enamel. The potters at Nevers, on the other hand, probably following a Persian motive, laid their blue enamel all over the pieces and traced their design in opaque white upon the surface. The peculiar tint of the blue and the exquisite purity of the white constitute the excellence of the faïence of Nevers; for while other work was carried out in varying styles, more or less rude, this blue and white ware was the leading characteristic of this particular centre, and constitutes its claim to favourable notice.

Far more important in point of excellence, but somewhat later in date, is the faïence of Rouen. MM. Gasnault and Garnier, in their admirable handbook on French pottery, consider that Rouen faïence takes, artistically, the highest place in early French ceramics, and their opinion is borne out by the high quality of the existing specimens. There is mention made of pottery in Rouen in 1644, but the earliest known example is dated 1647. The industry maintained a sluggish existence until the opening years of the eighteenth century, when a disastrous period of famine and war having depleted the French Treasury, some

patriotic persons sent their silver plate to the mint and purchased services of faïence. Their example was speedily followed, and the potters of Rouen had as much work as they could deal with. The result was a keen competition which had the effect of greatly raising the quality of the ceramic



Rouen Dish.

work and laying the foundation of a school of national art which has never been excelled. The features of Rouen work are the usual bright enamel ground, with borders in conventional style, wrought out in a deep indigo blue and a dull red. Some other colours are introduced to a slight extent, but the two spoken of take the lead.

The borders of dishes and platters are cleverly designed, and the whole style is eminently characteristic.

The success which attended the Norman potters caused, as is usually the case, many imitations. Even the Dutch carried out some of their works in Rouen style, but they could not equal the delicate fancy of the French. Thus Rouen pottery



Moustiers Jug.

became a recognised type, which was followed in several other parts of France. Some of the works made elsewhere are so nearly like the Rouen work that there is the greatest difficulty in giving an opinion as to the place of origin.

The jug here illustrated is believed to have been made at Moustiers, but there is one in South Kensington almost exactly similar in form which is said to belong to Rouen. The Moustiers potters were celebrated for the fine quality of their

enamel, and a contemporary writer stated that their ware was "said to be the most beautiful and finest in the kingdom" (Gasnault and Garnier). More colours were used here than by the Rouen school, consequent upon the return from Spain of some Moustiers workmen who had been invited there to make pottery for the Count d'Aranda. The treatment of the faïence produced at Moustiers is distinguished by delicate manipulation of wreaths of flowers, while the centres of plaques are frequently filled with figure subjects of the Italian school.

At Strasburg also there was a manufactory founded by the Hannong family, the usual marks being composed of the monograms of the brothers Paul and Joseph. They succeeded in making porcelain, but this, instead of leading them to renown and prosperity, had the contrary effect. Their success awakened the jealousy of the privileged manufactory at Vincennes, and the King, Louis XV., was easily induced to prohibit the production of porcelain at Strasburg. The brothers Hannong failed in their enterprise, and both eventually left the place.

To complete the survey of the principal ceramic centres of Europe before the porcelain era, it now only remains to deal with Germany. Setting aside the varieties of enamelled ware as comparatively unimportant, it will be found that the pottery of Central Europe in the sixteenth century may be classed under one comprehensive definition, salt-glazed stone-ware. For a long period this ware was known by the convenient title "*grès de Flandres*," a name which has been

shown to be incorrect as related to the modern map, but there were two good reasons for its adoption—first, that the centres of production were in former times included in the Low Countries, and second, that almost the whole exportation of these wares was from Flemish ports.

Stone-ware glazed by salt has such distinct characteristics of its own that a few lines must be devoted to a description of it. The name was no doubt derived from the close relation borne by the ware to stone itself. Hard and impervious, granular in texture, no better comparison could have been made. The clay used varied with the locality of the manufacture, but in every case it was convenient to employ a simple alluvial clay, with which was mixed a proportion of sand, to counteract excessive shrinkage and to help in resistance to the fire. There are three distinct colours of clay used—a rich brown, a creamy white, and a slaty grey; the last colour evidently originated the name "*grès de Flandres*."

The method of manufacture was that the potter's wheel was used for the form itself, and the fanciful embossment was applied by means of small pieces of soft clay which had been pressed into moulds of the required pattern. The details of these are in the best instances of the most exquisite sharpness, and are the more important in that they consist in many cases of coats-of-arms and badges which possess historical interest. But the great feature of this work is the glaze. Hitherto every substance used for glazing had been applied to the ware, either in the clay or the biscuit state, by dipping the piece in a vessel of glaze

or by painting the mixture over the ware. In stone-ware the glaze is vaporised in the oven and unites itself with the clay at the same time. There is something so original in this idea that it is evidently not borrowed from any outside



German Stone-ware.

source. It is not conceivable that any country, having once used the process, should have entirely forgotten it, and therefore to the potters of Germany or Flanders must be awarded the credit of the discovery. The glaze used was simply common salt, which was cast into the oven when at its greatest heat. Being volatilised, it entered

into combination with the silica in the clay, forming a thin glassy coating all over the piece. It may be remembered that in the story of "Robinson Crusoe" it is related that, on burning the earthenware pipkins which he had after long labour succeeded in forming, he found at the bottom of one of them a patch of glaze. Reasoning as to the cause of this, he remembered that there was in this particular vessel a little sea-water. The heat which he was able to obtain would hardly be sufficient to accomplish salt-glazing, but the story is an example of the various ways in which attempts have been made to account for the accidental discovery of the process. A still more absurd legend is current as to the introduction of salt-glaze work into Staffordshire, where it is said that a maidservant allowed a pot of brine to boil over, thus producing a glaze upon the vessel.

The main centres of the production of German stone-ware lay in the district now known as Rhenish Prussia. Seigburg, near Bonn, was the seat of the oldest and most important manufacture, though no very early dated pieces are known. Early in the sixteenth century fine work was produced here, and the clay used was commonly of the creamy white variety.

The brown ware was largely made at Raeren, near Aix-la-Chapelle, and at Cologne. In the possession of a collector at Aix is a fragment of Raeren ware bearing the date 1539, and this is the earliest dated example known. The effect which popular habits have upon productions is shown by the rapid increase in the number

of beer-mugs made in this ware. It is evident that stone mugs were fashionable in the beer-garden, and the potters were very willing to undertake the supply.

PART II

CHAPTER I

PORCELAIN EAST AND WEST

WHEN dealing with the productions of the Chinese Empire, mention was made of the fact that porcelain originated there, but the story of the introduction of this substance into Europe has yet to be told. It will also be well here to give a fuller definition of what is meant by "porcelain."

The following description, given in the catalogue of a collection of Continental Porcelain by the late Sir A. W. Franks, who quotes from M. Louis Solon, can hardly be improved upon:—

"Porcelain is the generic term employed to designate all kinds of pottery to which an incipient vitrification has been imparted by firing. This translucent pottery may be broadly divided into two classes: 1. Hard paste, containing only natural elements in the composition of the body and the glaze. This is the hard porcelain of China and Japan, and that of Europe made on the same principles. 2. Soft paste, where the body is an artificial combination of various materials, agglomerated by the action of fire, in which the

compound called a *frit* has been used as a substitute for a natural rock. The glaze with which this is covered is a glassy mixture. To this class belong the early Italian and French porcelains, and the larger part of English china."

The constituents of hard porcelain are china-stone and china-clay: the former is a soft granite known to mineralogists as pegmatite; the latter is identical with the kaolin of the Chinese, a name which has now been generally adopted in the West. The glaze consists mainly of pegmatite mixed with a little alkali, usually obtained from the ashes of some plant.

Soft porcelain is altogether different. The *frit* alluded to above is a mixture of sand and alkali which has been submitted to a sufficient heat to cause the two to unite. This is crushed and mingled with certain other substances, including a little clay to give some slight plasticity, and when the required articles are made they are subjected to sufficient heat to cause a certain amount of fusion. The glaze is for the most part composed of red lead and sand with a little clay.

It will thus be seen that the soft paste is only a clever makeshift. In the absence of the true constituents, the potters made the best of a bad job, and so well did they succeed that the soft porcelain exceeds the hard in beauty.

Early in the sixteenth century the beautiful porcelain imported into Europe from China became greatly prized, and it is not to be wondered at that the makers of faïence exerted themselves to the utmost to reproduce it. Porcelain would seem to have been made in Venice as early as 1519

and at Ferrara about 1575, but no specimen of either of these productions is known (Franks). In 1580, however, the famous Medici porcelain was made. This ware is now exceedingly valuable; there are two pieces in the British Museum and four in the Museum at South Kensington. The body, says Sir A. W. Franks, was not true hard paste, but still it contained some kaolin. Where this clay was procured it is hard to say, for as yet it was unknown in most parts of Europe. This ware was made in Florence under the patronage of the Grand Duke of Tuscany. The decoration was chiefly in blue under the glaze, and the pieces bear marks either of the dome of the Cathedral of Florence or of the Medici roundels familiarly known as the three balls of the pawnbroker.

Next in date to this Medici porcelain are the disputed works said to emanate from Paris and Rouen, and then comes the soft paste of St. Cloud made in 1695.

The entry of true porcelain into Europe was, however, when Johann Friedrich Böttger, chemist to the Elector of Saxony, discovered the secret about 1709. Böttger was trained as a doctor, and, becoming fond of scientific pursuits, busied himself in the search for the philosopher's stone, the great desideratum of the alchemists of his day. The high temperatures at which he conducted his experiments led him to investigate the nature of his crucibles, and obtaining a new supply of clay he succeeded in producing a fine red earthenware. This was of so dense a nature that it could be polished on the lathe and cut by the wheels of the lapidary. Of this ware some quantity must

have been made, for examples, some polished and some cut as described, are to be found in every leading museum.

While engaged in the manufacture of this red ware, it was his good fortune to make an important discovery. One morning, it is said, on taking up his wig, which had been carefully powdered by his valet, he noticed that it was much heavier than usual. He inquired the reason, and was informed that a new kind of hair-powder had been purchased, to which the weight of the wig was due. Examining this powder with great care, he became convinced that it was none other than the white earth which formed the main ingredient of Chinese porcelain. The earth had been discovered by accident. The story goes that an iron-master, John Schnorr by name, had found, when riding near Ave in Saxony, that his horse's hoofs made deep impressions in a pure white clay. He conceived the idea of using this as hair-powder, which was greatly in demand, and securing a sample he dried it, and eventually sold a quantity for that purpose. Falling into the hands of the experimenter as already described, this "Schnorr'sche weisse Erde" became the foundation of what is called, but incorrectly, Dresden porcelain. This ware was of the finest type of hard porcelain, and approached the Chinese very nearly in composition. The production was at once taken up by the King, and Böttger and his assistants were removed for greater safety to the Castle of Meissen, where they were practically imprisoned, and where the work was carried on for some years. Even the clay was sealed up in barrels by dumb persons,

and every workman was required to take a solemn oath not to reveal the secret.

The porcelain was at first very imperfect. Cobalt blue was of course used, and the large collection of Chinese and Japanese wares owned by the Elector led to a good deal of copying on the part of the artists. Böttger died in 1719, and in the



Meissen Porcelain.

following year a new development was undertaken: the direction was placed in the hands of Höroldt of Vienna, and he greatly enriched the work. A well known sculptor named Kändler was engaged, and it was he who superintended the modelling. The character of the work produced during the period 1731—1756 may be judged from the magnificent collection of figures and birds lent to the Bethnal Green Museum by the Hon. W. F. Massey-Mainwaring. The wonder is, in these examples, not so much that they could be modelled, but that

it was possible to fire and glaze them in safety. Mr. Chaffers states that Kändler made life-size figures of the twelve apostles, and worked for five years upon a colossal equestrian statue of Augustus III., which, however, was never finished. The usual mark upon Meissen porcelain, erroneously known as "Dresden," is two crossed swords, the arms of the Electors of Saxony.

Upon the success at Meissen a perfect epidemic of porcelain manufactories broke out. Germany was then divided into a number of small states, and the various rulers strove each to add a porcelain works to his possessions. The result of this competition was that great inducements were held out to the Meissen artificers to break their oath and take service elsewhere. As early as 1718 a Dutchman named du Pasquier established a manufactory at Vienna. He secured the services of a Meissen workman by undertaking a secret journey into Saxony, where, says Mr. Chaffers, he managed to get into communication with one Stenzel, whom he bribed by the promise of a thousand thalers per annum and a carriage. This promise was not fulfilled, and after a few years Stenzel returned to Meissen. Whether the truant were readmitted to the manufactory there or not history is silent. No success was met with at Vienna, and in 1744 the whole concern was offered to and accepted by the State. The Empress Maria Theresa extended to it her patronage, and matters were greatly improved. After sundry vicissitudes the direction was undertaken in 1784 by Baron von Sorgenthal, who produced the fine works which have made Vienna porcelain famous. He

engaged a chemist named Leithner, who compounded magnificent colours, and these were used with rich gilding to produce the gorgeous effects so well known. Vienna porcelain is commonly marked by a shield crossed with two bars—the shield of the arms of Austria. The factory ceased to exist in 1862.

At Berlin a manufactory of hard porcelain was established in 1750 by William Caspar Wegeli, who secured the services of some potters who left their work at Höchst on the Main in the hope of obtaining higher wages. In 1753 it was stated in the *Gentleman's Magazine* that the "whole art of making china-ware" had been discovered at Berlin, and the interest of this publication in porcelain manufacture may be traced to the fact that the proprietor, Edward Cave, was one of the original shareholders in the works at Worcester. The statement quoted above was, however, somewhat premature, as the Berlin works did not at first succeed. Wegeli parted with his interest to Gotzkowski, a financier, who in turn disposed of the manufactory to the King of Prussia in 1763.

The war between Prussia and Saxony greatly contributed to the success of the Berlin works and to the depreciation of those at Meissen; and when Dresden was occupied by the Prussian forces, a number of the artists engaged at the Meissen works were removed to Berlin, and by their aid the porcelain there was brought to great perfection.

Mr. Chaffers states that great quantities of clay were transported to Berlin for use, and that the King "restricted the Jews resident in any part of

his dominions from entering into the married state until each man had obtained a certificate from himself, which was only granted on the production of a voucher from the director of the manufactory that porcelain to a given amount had been purchased, and that there was reasonable cause for granting the indulgence. Of course the Jews more readily disposed of their purchases than the general dealers, and the device was attended with much success."

A new bed of clay was discovered in 1771, and in 1787 a commission was appointed which effected great improvements in the manufacture.

An interesting invention at Berlin was that of *Lithophanie*, pictures and portraits being produced by so modelling the surface of a plaque that when viewed by transmitted light the variations in thickness gave the light and shade on account of the greater translucency of the thin parts. No great use has been made of the idea, but small plaques treated in this manner are sometimes used in lamp-shades.

The Berlin manufactory is still in existence, and some very fine works in hard porcelain are being produced. At the Chicago Exhibition in 1893 was a magnificent bath over six feet in length which had been made in one piece, and in addition to the skill of the potter shown in such examples as this, the Berlin decorators have excelled in certain branches of their work, notably the painting of flowers and the use of cobalt blue at the *grand feu*, which is the usual glazing fire for hard porcelain. Berlin porcelain is greatly valued in the chemical laboratory, no other ware being found

so well adapted for the manufacture of dishes and crucibles.

In a previous chapter it has been mentioned that Hannong of Strasburg was prohibited, in virtue of the exclusive privilege granted to Vincennes, from making porcelain in France. He therefore crossed the border to Frankenthal, and, obtaining letters patent from Carl Theodore, the Elector Palatine, he founded a manufactory of porcelain in 1755. Hannong resigned the establishment to his son Joseph in 1759, and two years later the concern was purchased by the Elector himself, who gave much attention to the productions and greatly raised the standard of the work. The stock and utensils were sold in 1800, and removed to Greinstadt (Chaffers).

The style of Frankenthal was not unlike that of the other German factories, and the early mark was a lion rampant, crowned.

Like other German rulers, the Duke of Brunswick determined to have a manufactory of porcelain, and desired Von Langen to undertake the matter. He secured in 1746 the services of a deserter from Bayreuth, by name Glaser. This man seems only to have been a painter, but he nevertheless undertook to make porcelain for the Duke, and, naturally, failed. It was after about six years of experimenting at Furstenburg that something like success was attained, and then only by the aid of a workman from Höchst.

Both at Höchst and Bayreuth porcelain was made, at the former place under the patronage of the Elector of Mainz, and at the latter under the Margrave of Anspach, who also had a factory at

his own schloss at Bruchberg (Franks); and of the remaining works which owed their existence to the fancy of the ruler of the state may be mentioned Nymphenburg, where some workmen from Vienna were engaged by the Elector of Bavaria in 1754, and Ludwigsburg, where the Duke Carl of Württemberg founded a manufactory about 1758.

There was a great similarity in the productions of all these factories, as might be expected when it is remembered that in some cases the same workmen were employed. It would seem that at this particular period no more profitable employment existed than travelling from place to place in order to found porcelain manufactories. Runaway workmen were received with open arms, and were paid high salaries, though there is no doubt that many of them were impostors. Some of these professed experts required two, three, or four years before they were able to produce anything, and some of them were complete failures. As for the manufactories, the majority of them had but a brief existence. The original patrons passed away or their enthusiasm waned, and there was no regular business to support the establishments.

CHAPTER II

FRANCE, ITALY, AND SPAIN

IN considering the porcelain of France it will be necessary to look back a little, and to take up the story where it was left on the mention of the disputed works emanating from Paris and Rouen.

It is maintained by MM. Gasnault and Garnier that Louis Poterat of Rouen, known as "Le Sieur de St. Étienne," was the first to make porcelain in France. M. Jacquemart awards the palm to Claude Réverend of Paris, who obtained a privilege in 1664. Sir A. W. Franks puts aside both these claims, and states that the first true factory of soft paste porcelain was established at St. Cloud about 1695.

The probability is that both Réverend and Poterat had met with specimens of the Chinese porcelain then being largely imported. Being practical ceramists, they had both with sanguine expectation undertaken experiments for the purpose of imitating this ware, and being confident of ultimate success, they had each applied for, and obtained, the former in 1664, the latter in 1673, a "privilege." This would be equivalent to the modern "letters patent," and would have the effect of enabling the experimenter to develop his ideas in security. Now it would seem that neither of these inventors got beyond the stage of "provisional protection," and after a series of trials, which demonstrated to them that porcelain manufacture was not so easy as it looked, they abandoned the idea.

Hence the fact remains that it was at St. Cloud in 1695 that soft porcelain was first made on anything like a practical scale. In this it will be seen that France preceded Germany in the manufacture by some fourteen years, with this difference, that while Germany had to wait until the discovery of kaolin, France developed her work upon artificial lines.

Soft porcelain has already been described, and it will be noticed that in its production a very high degree of thought and skill was required. In fact it may be said that, while German porcelain was a discovery, French porcelain may be better described as an invention. The former depended absolutely upon the use of a certain clay; the latter was a skilful combination of various materials, each of which was by itself useless.

By letters patent granted in 1702 the widow and children of Pierre Chicanneau were permitted to carry on the manufacture of porcelain at St. Cloud, and although an English doctor travelling in 1698 stated that M. Morin was the inventor of the porcelain ware, it is now evident that he was only the manager of the works, and that the credit for the invention itself is due to Chicanneau.

MM. Gasnault and Garnier make the following quotation from a correspondent in the *Mercur* *Galant* of October 1700: "I forgot to mention that on the third day of last month Madame la Duchesse de Bourgogne, while passing through St. Cloud, drove to the door of Messieurs Chicanneau's house, where they have a few years since established a manufactory of fine porcelain which undoubtedly has no equal in all Europe. The princess was much pleased to witness the throwing on the potter's wheel of a few pieces of very fine shape; others were painted in her presence on more regular and better executed designs than those on Indian porcelain. Their Royal Highnesses Monsieur and Madame often honour MM. Chicanneau with their presence at the manufactory. It is also frequently visited by

princes, lords, ambassadors, and a number of amateurs, who go there daily to admire the beauty of the objects there manufactured, many of which are exported to foreign countries."

The reference to Indian porcelain may be explained by the fact that the bulk of the imported Chinese wares reached Europe through the agency of the East India Company and was understood to come "from the Indies." The interest taken in the porcelain of St. Cloud by the important personages spoken of above shows that the porcelain fever was not confined to Germany, but that it had also seized upon France.

This is scarcely a matter for surprise, as the dilettanti of France were ever keen upon fine works of art, and although the porcelain then manufactured did not reach a high pitch of excellence, it was new and there were in it great possibilities.

Besides this, there was a certain amount of romance surrounding the composition of porcelain. Panciroti in his "*Rerum Memorabilium Libri Duo*," published in the sixteenth century, wrote: "Past generations had not seen porcelain, which is really a mass composed of plaster, eggs, shells of marine locusts, and such-like; this being well kneaded and mixed together is hidden in the ground by the head of the family, whose secret is known only to his children, and there it remains for eighty years without being brought to the light, after which his heirs remove it, and, finding it appropriate to some work, fashion it into those precious vases, so beautiful to the eye in shape and colour that architects cannot detect any fault in them; these vases have such wonderful properties that if

poison be put into them they immediately burst asunder. He who has buried this matter never sees it again, but leaves it for his children, nephews, or heirs, as a rich treasure on account of the profit they derive from it, and it is much more valuable than gold" (Gasnault and Garnier).

From this it will be seen that a superstitious value once attached to porcelain, and this had scarcely disappeared at the time of the invention at St. Cloud. The mention of "shells of marine locusts" leads up to the derivation of the term "porcelain" from the shell *Cypræa porcellana*, which was used for making various artistic objects. This was named in French *porcelaine*—hence the English word.

The porcelain of St. Cloud is soft and creamy in tone; the tender nature of the glaze can be appreciated even by the sense of touch, and the paste is very translucent. The first mark was a sun, supposed to be an emblem of the King, Louis XIV.; but later the letter T was used, being the initial of Henri Trou, who married the widow of Chicanneau.

The works at St. Cloud were destroyed by fire, believed to have been purposely caused, in 1773, and have never been rebuilt.

Following upon this first manufactory were others of varying importance at Chantilly, Mennecey, Arras, and other places, and also at Lille and Tournay, which have each belonged to France and Belgium in turn. Soft porcelain only was made, but the term *pâte tendre* did not come into use until later, when the *pâte dure* was discovered.

The most important manufactory in France is

of course that at Sèvres, and into the history of this celebrated establishment it will be necessary to enter somewhat fully.

There is a close connection between this and St. Cloud, for in the year 1740 two brothers, by name Dubois, left St. Cloud and went to Chantilly, thus following the example of their German congeners. From Chantilly they were dismissed



St. Cloud Porcelain.

for questionable conduct, and they then applied to the Marquis Orry de Fulvy and suggested that they were able to make porcelain, if he would find the means. Being doubtless touched by the prevailing fever, the Marquis gave his consent to the plan, and established them in the riding school of the château of Vincennes. He soon had cause to regret his action. His confidence was entirely misplaced, and though the brothers succeeded

in persuading him for some years that only time was necessary, they eventually were compelled to leave Vincennes, having utterly failed in everything but expenditure. The Marquis was in despair, when a man named Gravant offered his services, and stated that he could carry out what the others had failed to perfect. He was as good as his word, and in 1745 some specimens were finished. A company was now formed for the energetic prosecution of the work, and the manufacturers were granted an exclusive privilege for thirty years.

Notwithstanding the progress made, it was not until 1748 that a vase could be completed which was deemed fit for presentation to the Queen. MM. Gasnault and Garnier quote from the Duc de Luynes, who wrote in that year as follows :—

“M. de Fulvy, who continues at the head of the porcelain manufactory of Vincennes, caused to be brought to the Queen to-day a porcelain vase presented by the company to her Majesty. This vase is of white fashioned porcelain, and accompanied by three small white figures; the whole is mounted on a gilt bronze pedestal. There is in the vase a bouquet of flowers made also of porcelain. M. de Fulvy told us that there were four hundred and eighty flowers in the bouquet. The pedestal, vase, and bouquet may be about three feet in height. The bronze mounting alone cost a hundred louis (£94), and the porcelain about as much; it is a perfect work of its kind, as much for the whiteness as for the execution of the small figures and flowers. This manufactory is now, for the making of flowers, superior to those of Saxony.”

The interest excited by this vase was so great that the young Dauphine, daughter of the Elector of Saxony, determined to send a similar piece as a present to her father, in order to show him that the Saxons were not the only porcelain-makers. It was at first determined, says the Duc de Luynes, to send this vase by hand, entrusting it to the care of two men who were to walk all the way, carrying it between them; but this plan was finally abandoned. The vase was taken to pieces and packed, while the man who at first set it up was ordered to proceed to Dresden, that he might unpack the parts and re-erect the vase.

One of the best descriptions of the manipulation of this porcelain is found in the handbook on French porcelain by MM. Gasnault and Garnier, from which several quotations have already been made. They state that "the paste was composed of sand of Fontainebleau, saltpetre, sea-salt, soda, alum, and gypsum; all these were mixed together and placed in an oven in a layer of considerable thickness, where after being baked for at least fifty hours they formed a perfectly white frit, or vitrified paste. The frit having previously been crushed was mixed with Argenteuil marl (pipeclay), in the proportion of nine pounds of frit to three of marl, and a paste was thus obtained which was kneaded by machine for about three weeks; it was then put to dry in troughs, pressed by cylinders, sifted and wetted so as to form lumps, which were made plastic with green soap and boiling water. These various operations required considerable time and care.

'The preparation of the glaze required quite as

much care. It consisted of sand of Fontainebleau, litharge, salts of soda, Bougival silex or gun-flint, and potash; all these were crushed and mixed together, and were then melted in crucibles, in which they were transformed into a kind of crystal which, being pulverised and wetted, formed an enamel.

"The pieces were first baked 'in biscuit' and then enamelled, the glaze being poured over the pieces and not the pieces dipped into the glaze; and in order to fix the enamel more firmly to the biscuit, it was mixed with vinegar at the moment it was applied."

From this lucid description the exact nature of the porcelain may be gathered, and it will be seen that the extreme softness of the glaze would account for the luscious tenderness of colour so apparent in this ware.

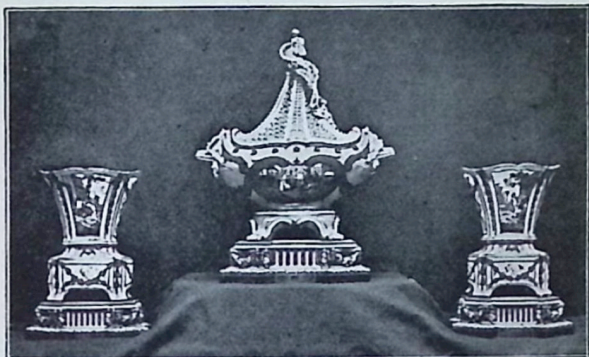
In 1753 the King himself took a third share in the works, and the privilege was renewed for twelve years. At the same time the title "*Manufacture Royale des Porcelaines de France*" was authorised and the royal monogram of two crossed L's was adopted as the mark.

A growing demand for the porcelain led to the removal of the manufactory in 1756 to Sèvres, this place being selected on account of its proximity to Versailles, and here the finest works in *pâte tendre* were produced.

The illustration represents a magnificent set of vases which were presented by Louis XV. to the sixth Earl of Coventry. They remained at Croome Court in Worcestershire for many years, until a wealthy nobleman having made an offer

for them, the owner thought of sending them for sale by auction. The vases excited much attention when they appeared at Christie's, and the contest for their possession was very keen. Eventually the late Earl of Dudley became the purchaser, having paid for them the enormous price of ten thousand guineas.

When upon the decease of the owner the



Sèvres Porcelain (*Pâte tendre*).

Dudley china was dispersed, many were the speculations as to whether the Coventry vases would again reach the figure mentioned, but it was found that they had been disposed of to a London dealer by private arrangement.

The three pieces are in the best style of Sèvres *pâte tendre*; the central vase is the well known *vaisseau à mâts*, suggested by the arms of the city of Paris.

In the year 1759 certain differences arose between the King and the other proprietors of the manufactory. An inquiry was undertaken, with the result that Louis XV. paid to the malcontents the whole of their capital, and thus became sole proprietor of the works. Boileau was retained as director, and the high standard of the productions was well maintained. But scientists were still searching for the means of making hard porcelain, and several persons came forward offering to disclose the secret. It was found, however, that in the absence of kaolin no economy was likely to be effected, and it was not until 1768 that accident revealed, as it had done in Saxony, what science failed to discover.

Madame Darnet, the wife of a country physician, passing one day through a ravine in the neighbourhood of St. Yrieix, a village among the hills south of Limoges, came upon a mass of white earth. This she imagined might be used as a cheap substitute for soap, and she carried some home for the purpose. She showed it to her husband, who in turn took it to a friend who knew of the desire to obtain a clay suitable for porcelain. The sample was eventually submitted to Macquer, the chemist engaged at the royal manufactory, and he at once recognised the kaolin which alone was necessary for the production of hard porcelain.

From this time the superior manufacturing qualities of the new material caused its gradual substitution for the old. The soft paste, while unsurpassable in beauty, was not practicable for large works or certain intricate forms, and the

losses occasioned in firing were very great. It was on December 21st, 1769, that Macquer submitted to the King the first sixty specimens of the new porcelain (Gasnault and Garnier). Both porcelains were worked for some time, until M. Brogniart, who was appointed director in 1800, determined to abandon altogether the use of the *pâte tendre*. In 1804 the change was made, and the beautiful soft porcelain of Sèvres was produced no more.

The manufactory has ever since been carried on, under various dynasties, as a national work. A considerable annual subsidy is received, and fine works are produced regardless of cost.

The royal monogram continued to be used as the mark until 1795, the letters of the alphabet being added as a date-mark—thus A represented 1753 and Z 1777. After this double letters were used up to RR (Chaffers). In addition to this each painter and decorator had a special mark or signature the presence of which denoted his work. After the downfall of the Bourbon dynasty various marks were used: first a monogram R.F. with the word Sèvres, and then several other letters and signs denoting the changes which rapidly occurred. The early marks are of course found upon soft porcelain only, but when the two wares were made both were marked in the same manner.

It may be well here to point out a fact in the history of Sèvres porcelain which may help to put collectors on their guard against spurious specimens. The whole of the stock of undecorated soft paste was sold off at low prices in 1804, when the manufacture was discontinued. This was

eagerly bought by unscrupulous decorators, who at once began to finish the pieces with painting and gilding, selling them as genuine work. In consequence there was put upon the market a quantity of real Sèvres porcelain which was painted in an inferior manner, and some of this is still changing hands.

Upon the discovery of kaolin at St. Yrieix a number of porcelain works were started in France, as they had been in Germany, but in no case was the result of great importance. In Paris several *ateliers* were opened, and, the rigorous monopoly of Sèvres being somewhat relaxed, a quantity of indifferent work was done with some of superior quality. There were a couple of establishments in Limoges in 1779, but notwithstanding the proximity of the kaolin beds it was some time before the manufacture was developed in that place, which has since become the centre of the porcelain industry in France.

The early porcelains made in Italy have been alluded to in a previous chapter as having led the way in Europe, but the interest attaching to these is more from the very early date of their production than from the importance of the work. The Medici porcelain is valuable on account of its extreme rarity. Mr. Chaffers gives a list of twenty-six pieces, which he says are all that are known to be in existence. Of these ten are in public museums,* and the remainder in the hands of private collectors.

From 1580 no porcelain was made in Italy for

* Sèvres Museum five pieces, South Kensington Museum three pieces, and British Museum two pieces.

nearly a hundred and forty years, but after the factory at Meissen had been established, runaway workmen presented themselves to Italian rulers as well as to German and French.

At Venice the idea was taken up by Francesco Vezzi, a goldsmith, in 1719, and he invested large sums of money in the prosecution of the manufacture. Considerable difficulty was experienced from the fact that all the clay had to be procured from Saxony, and after the death of Vezzi in 1740 the work was allowed to decay. Another effort was made in 1758, when a German named Hewelcke obtained a privilege to manufacture porcelain. He and his wife alleged that in consequence of the war then being waged in their native land they were compelled to seek in another country the means of carrying on their occupation. A second privilege was granted in 1762 to a rival potter, and the result of this was so unsatisfactory that Hewelcke took advantage of the termination of the war to return to his own country.

In 1765 a new manufactory was opened by an Italian named Cozzi, who stated that he had discovered near Venice a suitable clay. He seems to have begun entirely upon Oriental lines, and Mr. Chaffers gives the following quotation from an official report upon his work: "Concerning the manufactory of Japanese porcelain, it was begun only in 1765; your Excellencies were eye-witnesses of its rapid progress, and therefore deservedly protected and assisted him. He works now with three furnaces, and has erected a fourth, a very large one, for the manufacture of dishes. He has constantly in his employ forty-five workmen,

including the six apprentices whom he has undertaken to educate, and from the date of his privilege in August 1765 down to the middle of December 1766 has disposed of sixteen thousand ducats' worth of manufactured goods, so that it may be fairly inferred that he will yet continue to make greater progress both in quantity and quality."

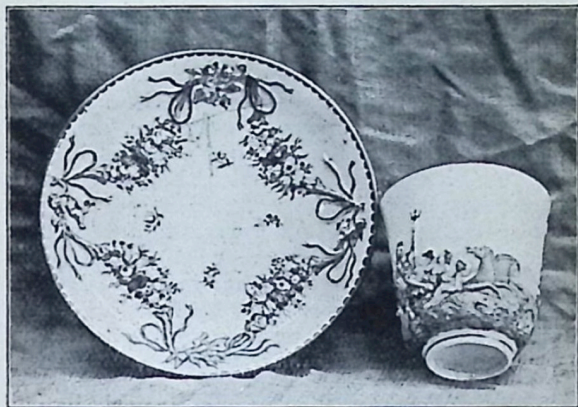
Cozzi continued to carry on a successful business until 1812, when the factory came to an end.

The manufactory at Doccia, near Florence, owes its existence to the enterprise of the Marchese Carlo Ginori, who in 1735 determined to produce porcelain. Even he was, however, dependent upon a German chemist named Wandhelein, who had been engaged at the Vienna works. The Marchese sent a vessel to the Far East in order to procure the actual materials used by the Chinese, and in 1737 he was able to show a successful result. These works have been carried on ever since by the Ginori family, and much of the modern work is good, though they have laid themselves open to a charge of copying early Italian marks upon their wares.

Some other minor manufactories were started in Italy, but the most interesting and important was that at Capo di Monte, near Naples. This, like other factories mentioned, owed its existence to a prince. Charles Bourbon became King of Naples in 1735, and, smitten with the fashion of the time, determined to make porcelain. In 1738 he married a Princess of Saxony, but he did not depend upon foreigners for his ideas. The ware made at Capo di Monte had no relation to the hard paste of Saxony, but was an artificial soft paste more like

that of Vincennes. The King took a great personal interest in the manufacture, and is said to have worked at the bench himself. He also watched the financial progress of the concern closely, and looked favourably upon any who made purchases.

The factory at Capo di Monte was closely connected with that at Buen Retiro, near Madrid, for



Capo di Monte Porcelain.

when Charles was called to the throne of Spain in 1759 he determined to take his porcelain works with him. Mr. Chaffers gives the following letter written by the King's order to the Secretary of State at Madrid:—

“In the same manner the workmen and the utensils used at the royal manufactory of porcelain at Capo di Monte are to be embarked from Naples

direct to Alicant, in the vessels prepared for that purpose, in order to continue from there the journey to Madrid. The necessary conveyances are to be provided and the expenses to be charged to his Majesty's account."

The result of this wholesale transportation was, naturally, a death-blow to the works at Capo di Monte, and though Prince Ferdinand removed the remnant to Portici and afterwards to Naples, the early spirit had passed away and was never recovered.

At Buen Retiro the whole of the output was reserved for royal use until after the death of Charles in 1788. The style of work was at first, as might be expected, similar to that at Capo di Monte, but later an attempt was made to copy Sèvres, Wedgwood, and other wares in appearance, if not in method. There are two rooms, one in the palace at Madrid, the other in the palace at Aranjuez, which are described by Ponz, who says of that at Madrid: "The room is covered with large plaques of porcelain made at the manufactory of the Retiro. In some are represented figures of children, copied from good models, and between each compartment looking-glasses are let in." And of that at Aranjuez: "The porcelain room you have already seen and know how fine it is, and how remarkable are the pieces of which it is made. It was begun and finished in the manufactory that his Majesty has at the Retiro" (Chaffers). The manufactory was closed in 1808.

PART III

CHAPTER I

POTTERY IN ENGLAND

THE Ancient Briton was apparently constituted much as other savages were and are, and it is hardly to be expected that his skill, as evidenced in his pottery, would be of a very high order. But at the same time it is now evident that the calibre of his mind must have been different from that of the modern savage, as personified in the negro or Fijian. He sprang from a different stock, and was therefore capable of development and improvement.

The pottery of the early inhabitants of these islands is mainly known to antiquarians from the fact that vessels of varied form have been found in the grave mounds or barrows which are so numerous in most parts of the country.

These vessels fulfilled certain purposes, and are classed separately as cinerary urns, food vessels, drinking cups, and incense cups; the last named are called immolation urns by Mr. Jewitt, and it is admitted by all that the purposes to which the different forms were put are very imperfectly understood. The illustration contains a specimen of each class, the incense or immolation urn being in two pieces, pot and cover.

The largest vase represents the cinerary urn. This is usually found either full of or inverted over a quantity of partially burned human bones,

evidently the ashes of the funeral pyre which had been kindled on the site of the tumulus. The drinking cup stands on the left of the picture, and was made with a thin lip to facilitate use. These vessels are often found with a sedimentary deposit inside, leading to the belief that they have been placed beside the dead body to contain water for the use of the departed spirit. The third large vessel is understood to have been commonly used for food, and both this and the drinking cup are more frequently found beside bodies which had not undergone cremation. In the funeral pyre the vases seem to have been placed in clay, and to have been burned to hardness by the same flames that consumed the dead body. Around the incense pots or immolation urns Mr. Jewitt has woven a curious legend, to the effect that they were made to contain the ashes of an infant. In giving life to the little one the mother had lost her own, and had sacrificed herself in vain, for the child soon followed her into the unknown. A tiny jar was then fashioned, and in some cases decorated with loving care. Upon the pyre the bodies of mother and babe had been laid, and the ashes of the two were deposited, one part in the larger vessel, the rest in the smaller, which was then placed within the mouth of the other. It may be, however, that the comparatively unusual circumstance of a dual death would hardly account for the number of small jars found, in which case the suggestion is added that if the mother alone died the infant was not permitted to live.

The method by which these different pieces

were manufactured was very primitive and imperfect. The wheel was unknown, and therefore every vessel had to be shaped by the hand alone, the walls built up and thumb-moulded, so that a regular outline was impracticable. In this way also the necessity would arise for each piece to be open at the mouth, so as to admit the hand of the potter. With a wheel the workman can close up the orifice of his vessel from outside,



British Pottery.

as may be seen in a stone ink-pot or a gingerbeer bottle; but without the aid of the wheel this cannot be done, and hence the open mouth of the antique jar. No doubt an endeavour at decoration manifested itself very soon, and this took the form of incised and impressed lines. Wicker-work seems to have given an idea, and the Romans named some of their wares *bascaudæ*, or baskets, doubtless by reason of the fact that wicker patterns were impressed upon the soft clay. A favourite method was to twist together two or

three leather thongs, and to impress this twisted rope upon the clay, or to tie it round the whole vessel, thus producing an ornamental line. It is easy to conceive how this method might have arisen. A potter was engaged upon a large piece of work, but found great difficulty in getting the clay to stand in its wet state without support. He placed inside his vase a piece of wood—a small tree-trunk would serve—and tied a cord round the clay to keep it in position. When his work grew hard he could remove the cord, and lo ! an ornamental line would reveal itself upon the neck of the vase. Having once got the idea nothing would be easier than to repeat the method, and so the work grew.

At one time there was an opinion expressed that these early works were only sun-dried, but this is erroneous. Sun-dried clay remains clay, and only needs the addition of water to again become plastic. In order to make pottery, at least a portion of the combined water must be driven from the clay by a red heat. This can of course only be accomplished in a fire, and although it is scarcely likely that kilns were used, some arrangement must have been made for burning the wares. That this burning was often unequal is seen from the fact that many pieces are found to be blackened on one side and burned to a red colour on the other. This would be the natural result of burning vases upon the funeral pyre, but it would also occur when they were baked in an open fire of wood, as was most probably the case.

The date at which these wares were produced is not positively ascertained. No pottery has without doubt been traced back to the palæolithic or

early stone age. In the neolithic or newer stone age, characterised by polished stone implements and the fact that neither bronze nor iron appears, pottery is found to be very widely spread, but scarcely abundant. In the bronze age, to which the British barrows partly belong, large quantities of fictile wares are found, but as yet more or less rude in construction and without the potter's wheel.

Some application of mechanical power became



Late Celtic Ware.

known to the Celtic people during the first century B.C., apparently about the time of the early attempts at conquest made by the Romans. It is of course pure conjecture that the invaders had anything to do with the production of this late Celtic ware, but that the wheel was used is evident from an examination of the work. These and similar pieces were found in Kent, and must have immediately preceded the Roman occupation. The knowledge of the potter's wheel is generally attri-

buted to Roman influence: whence then did these Celts derive their information? Was there a potter amongst the host of Cæsar, and was there any opportunity for him to exhibit his skill? Who knows but some adventurous Roman, straying from camp, came upon a potter at work, and managed to convey to him the idea that they did these things better in his country. The origin of this particular device will never be certainly known, but when the Romans came in force they brought their own potters, and greatly developed wheel work and elevated pottery to the level of an art.

The wares of the Romans varied according to the locality in which they were made. Local clay was, for the most part, used, and thus different results were obtained. The Samian red ware was not made in Britain; all that has been found was imported, and has already been dealt with in the chapter on Roman wares; but there are belonging to Great Britain several special classes of pottery which have been named after the districts in which they have been found.

In the Upchurch marshes at the mouth of the river Medway extensive potteries must have existed. The fragments extend over a large area and are in great abundance. Nor is this ware confined to Great Britain. In Germany similar clay exists and similar wares have been made. The characteristics have been mentioned in the chapter on Roman pottery. They are a stony black or grey colour, a surface more or less rough, and decorations consisting of graven lines or of small lumps of clay stuck over the pieces in regular order. The large vase in the illustration is decorated by

polished lines upon the rough clay, and this, while not usual upon Upchurch ware, is a feature distinctly belonging to black ware. The colour is due, according to Mr. Artis, to the method of firing, in which a quantity of smoke seems to have been admitted to the kilns, with the effect of depositing carbon in the ware and of reducing the



Black or Grey Ware.

red oxide of iron in the clay to the condition of black or magnetic oxide.

Castor, near Peterborough, has become famous on account of the large quantity of a special kind of Roman pottery found there, and also because there were unearthed there in 1822, by the late Mr. Artis, two Roman kilns. The Celts do not seem to have understood the firing of closed kilns, and the introduction of this method was naturally

a great step in advance. Larger pieces could be fired with less risk and the result was more certain. Models of both these kilns are to be seen in the Museum of Practical Geology, as well as a number of the vases from the same neighbourhood.

A leading feature of Castor ware is that it is decorated with a white or creamy slip. A light coloured clay was worked up with water until it would flow readily from a small rod, and with this there was traced upon the dark clay, before burning, a pattern. Subjects of all kinds were used—stags and hounds, flowers and foliage, the hunted hare and the wounded boar—besides conventional designs in considerable variety. A celebrated vase in the Colchester Museum has figures of gladiators upon one side of it, while upon the other is a hunting scene.

Mr. Artis thus describes the method used in the decoration of Castor ware: "Ornamenting with figures of animals was effected by means of sharp and blunt skewer instruments and a slip of suitable consistency. These instruments seem to have been of two kinds: one thick enough to carry sufficient slip for the nose, neck, body, and front thigh; the other of a more delicate kind, for a thinner slip, for the tongue, lower jaws, eye, fore and hind legs, and tail. There seems to have been no retouching after the slip trailed from the instrument. Field sports seem to have been favourite subjects with our Romano-British artists. The representations of deer and hare hunts are good and spirited; the courage and energy of the hounds and the distress of the hunted animals are given with great skill and fidelity, especially

when the simple and off-handed process by which they must have been executed is taken into consideration."

In 1677 an important discovery of Roman kilns and earthenware was made close to St. Paul's Cathedral, and an interesting record of the same by John Conyers, who describes himself as an apothecary, is preserved in the British Museum. Conyers explains that the kilns "had no other matter for their form and building but the outward loam as it naturally lay, crusted hardish by the heat." The flues under the kilns seem also to have been dug out of the natural clay. These ovens were about five feet in height and the same in diameter.

In the New Forest there were extensive Roman potteries, and, as in the Upchurch marshes, the potters seem to have followed up the beds of clay as they became exhausted, thus leaving behind them a large area covered with remains.

In these places there were colonies of potters, but there are also other localities where the Romans planted their camps, to which ware from the centres of manufacture was brought. At the same time it was easier in the majority of cases to make the ruder vessels on the spot; hence it is not unusual to find side by side with vases from Upchurch or Castor, and with imported Samian dishes, jars made of local clay, and the ruins of a small kiln.

Thus the art of the Roman potter overspread the country, but the natives, even then open to the charge of insular prejudice, apparently disdained to learn from the superior power, for as

the Roman legions were recalled from Britain the potteries waned, and finally disappeared; but at the same time there grew up side by side with the remnants of the Roman work the rude wares of the Anglo-Saxon.

This pottery is thus excellently described by Mr. Wright: "The pottery is usually made of a rather dark clay, coloured outside brown or dark slate-colour, which has sometimes a tint of green and is sometimes black. These urns appear often to have been made with the hand, without the employment of the lathe; the texture of the clay is rather coarse, and they are rarely well baked. The favourite ornaments are bands of parallel lines encircling the vessel, or verticals and zig-zags, sometimes arranged in small bands, and sometimes on a larger scale, covering half the elevation of the urn; and in this latter case the spaces are filled up with small circles and crosses and other marks, stamped or painted in white. Other ornaments are met with, some of which are evidently unskilful attempts at imitating the well known egg-and-tongue and other ornaments of the Roman Samian ware, which, from the specimens and even fragments found in their graves, appear to have been much admired and valued by the Anglo-Saxons. But a still more characteristic peculiarity of the pottery of the Anglo-Saxon burial urns consists in raised knobs or bosses, arranged symmetrically around them, and sometimes forming a sort of rib, while in the ruder examples they become mere round lumps, or even present only a slight swelling on the surface of the vessel. That these vessels belong to the

early Anglo-Saxon period is proved beyond any doubt by the various objects, such as arms and personal ornaments, which are found with them, and they present evident imitations both of Roman forms and of Roman ornamentation."

Mr. Wright further points out that one of these Anglo-Saxon urns illustrates an important ethnological fact—namely, that the Roman population remained in England after the withdrawal of the Roman power; that they mixed with the Anglo-Saxon conquerors, and yet retained for some time their own manners and language, and their own burial ceremonies. There was obtained by Mr. Faussett, from an Anglo-Saxon burial-ground in Norfolk, an Anglo-Saxon urn which contained the bones of a young girl. Upon the surface of this urn Mr. Roach-Smith discovered a Latin inscription of which the translation reads:—

"To the gods of the shades. To Lælia Rufina. She lived thirteen years, three months, and six days."

The character of the pottery demonstrates it to be Anglo-Saxon. The inscription is indisputably Roman, both in language and ceremony.

The influence of the Anglo-Saxon seems to have been detrimental to any kind of art. Possibly the continual state of war into which they were forced by restive aborigines and threatening invaders prevented any attention being given to the arts of peace. In any case the work of the potter degenerated rapidly, until during the later years of the Saxon power only the rudest kind of ware was produced. Nor did the Norman conquest improve matters much. Very little is known of the pottery of this period, but Mr. Jewitt

claims to have discovered a Norman manufactory of pottery at Burley Hill.

It may be said that English pottery remained practically without character or value during the middle ages and on until the seventeenth century. One or two exceptions appear. Professor Church states that in Mr. Willett's collection are two green glazed jugs which have been assigned to the Plantagenet period. These were found in a well at Chichester, and the imagination wanders back to the mediæval maidens who stayed to gossip at the brink of the well, and, perhaps in playful gesture, lost their grasp of the pitchers. There they lay for five hundred years to tell future generations of the carelessness of their owners. These jugs possess no artistic merit, but there was a branch of ceramic work in operation during the same period which is scarcely excelled for beauty to-day. Religious zeal, though at a low ebb, seems to have led to the manufacture, for the use of the monasteries, of inlaid tiles. Professor Church says that "the earliest tiles were of one colour, while the designs upon them were either incised, impressed, or embossed. Inlaid tiles were next produced, these being in fact first impressed and then having the hollows filled in with a differently coloured clay." The same author considers that these tiles were made within the precincts of the religious houses, which borrowed many of their arts from abroad.

There were also made in large numbers water-bottles for the use of travellers. These, termed costrels or pilgrims' bottles, were of flattened form and fitted with rings of clay, through which a

cord could be passed, that the vessel might be slung. So until the close of the Tudor period the potters of England maintained a dead level of mediocre work, when the dawn of the Renaissance in Europe was reflected over the British Isles.

In the year 1671 John Dwight established a manufactory of stoneware at Fulham, obtaining from King Charles II. a patent entitling him to make "the stoneware vulgarly called Cologne ware." He also claimed to be able to manufacture porcelain, but either the term was not then understood in its modern significance, or he failed to perfect what he had hoped; * for though his stoneware is of very fine quality, it is still only stoneware and not porcelain.

Dwight's family trials are enshrined in his wares, for there are in existence three mementoes of his little daughter Lydia. One is a full-length statuette; another is a half-length reclining figure, modelled after her death, and on the back of this there is an inscription, "Lydia Dwight, died March 3rd, 1673." The third is a cast of her tiny hand reproduced in stoneware. Thus were the home affections of the potter enshrined in his clay.

Dwight busied himself in the manufacture of salt-glazed stoneware as well as other descriptions of pottery. The process of salt-glazing would seem to have been derived by him direct from Germany, and he alone practised this art for some years.

* There is a third possibility, viz. that Dwight really made porcelain, but that specimens of his work have totally disappeared, or are lying unrecognised in some obscure retreat.

A notable vessel made in this ware was the Greybeard or Bellarmin. First imported from the Continent, these vessels were afterwards made somewhat extensively in England, many of them by Dwight. They retained their distinctive name, derisively given in reference to Cardinal Bellarmin, who had, by his persecution of the Reformers in the Low Countries, brought upon himself the dislike of the Protestants. The usual form of the jug is a round corpulent body with a small neck, upon the front of which is a grotesque bearded mask. This suggested to some wag a likeness of the obnoxious Cardinal, and the name, once given, clung.

A small factory of superior stoneware, which seems to have been an offshoot of Fulham, was established at Mortlake about 1750. Some of the specimens are impressed "Kishere, Mortlake," and the ware is characteristic of the better class of English stoneware. From this it is but a step to the famous potteries at Lambeth, which will fall into line later on.

A most important class of English pottery is that known as slip-painted. Mr. Solon, who in his interesting work "The Art of the Old English Potter" has fully described slip-decorated wares, says: "This process, the simplest of all the means of polychrome decoration employed in early times, since it required nothing but the natural materials picked out of the earth, the old English potter, in some sort, made his own by the diversity of effects he contrived to create out of it. It consisted in producing a design on the surface of the piece by pouring, through a

small pipe, clay diluted with water to the consistency of a batter; this slip flowed in running traceries or dropped in small dots, boldly contrasting with the colour of the ground." It will be remembered that the same treatment has been spoken of as adopted by the Romans in the wares found at Castor, but it is incredible that the memory of the art should have bridged the thirteen centuries which separated the early workman from the later. There is practically no difference between the methods, but without doubt the second producer should have as much credit for inventive power as the first. The earliest slip-decorated wares come from Wrotham in Kent, where there seems to have



Wrotham Slip Ware.

been a small manufactory about 1688. The idea of working in slip directly followed upon the application of moulded bosses and other ornaments, and it is not unlikely that a desire for greater freedom in design led to a less constrained treatment.

Many of the pieces are decorated with either names or initials, probably those of the persons for whom the pots were made. Mr. Solon enumerates the following most usual forms: "The *Dish*, found in large numbers and in every variety of

size and ornamentation. The *Tyg*, a tall cup, the simple outline of which was enriched by an unlimited number of handles. The *Piggin*, often finely decorated: this is a small and shallow vessel, provided with a long handle at one side for the purpose of ladling out the liquor brewed in the *tyg*. The *Candlestick*, found most frequently in the south of England and often adorned like the *tyg* with numerous handles. The *Cradle*, almost peculiar to the Midland Counties and seldom found elsewhere. The *Jug* and *Puzzle Jug* both plain and fanciful,* and certain others that are comparatively rare. The use of these articles seems obvious, except perhaps in the case of the cradle, which was made as an offering for christening feasts, forerunner of the silver cradle often presented in modern times to a mayor who experiences the pride of fatherhood during his term of office. The *tyg* is an obsolete article, except that in the latter-day loving cup there is a survival of the many handled goblet which was made to supply the needs of several drinkers.*

While the majority of the slip wares were decorated in the manner already described, Professor Church gives the following account of another method which was mainly used for large pieces such as dishes: "A 'bat' of clay was taken and pressed into an intaglio mould or form. When

* The inscriptions upon some of these wares are quaint and interesting. The most important have been noted and illustrated by John Eliot Hodgkin, F.S.A., and Edith Hodgkin in their beautiful work "Examples of Early English Pottery, named, dated, and described" (London, 1891).

dry and hard the piece was removed from the mould and coloured slips were poured into the depressions, the limits to their flow being sharply defined by the ridges on the piece." Such work being dependent upon a mould is considered by many to be inferior in artistic merit to that in which the hand alone is employed, and certainly while there is much greater freedom in the handwork, the moulded lines do not carry any compensating advantage as to accuracy.

These dishes were doubtless used for the ordinary purposes of the table, and formed the usual outfit of the kitchen dresser. Made, it might be said, by cottagers and for cottagers, these quaint works seem to breathe the spirit of the time, and it must be evident to all that they were part and parcel of the artisan life of the period.

One of the names appearing on the best examples of slip-decorated dishes is that of Thomas Toft, whose work was, in the opinion of Professor Church, made for ornament rather than for use. Toft was ambitious in his choice of subjects, and did not hesitate to attempt the human figure. It is hardly to be expected that his drawing would be perfect, and when added to this is the technical difficulty of working in a thick liquid poured from a kind of small teapot the wonder is that he was able to express himself at all.

The English potters very early in the history of their art showed their versatility by attempting, first in one direction and then in another, to produce something new. In some cases no doubt

the inspiration came from abroad, but these instances are in the minority. When Delft ware was imported the English potters soon copied it, or rather accepted the suggestion of an opaque white glaze.

At Lambeth this tin-glazed ware was the work of a Dutchman, to judge at least by his name, Van Hamme. He took out a patent in 1676 for the making of pottery "after the way practised in Holland," and his was, probably, the first Delft ware made in England.



Puzzle Jug, Lambeth Delft.

A favourite device of the Lambeth workers was the puzzle jug, of which the neck was so perforated that it would seem impossible to reach the liquor. The jug in the engraving bears the inscription:—

"What though I'm common and well known
To almost every one in town
My purse to sixpence if you will
That, if you drink you some do spill."

A doggerel verse on a similar jug reads:—

"In this jug there is good liquor
Fit for either priest or vicar
But to drink and not to spill
Will try the utmost of your skill."

The secret is that the handle was made of a hollow tube, and the same tube was continued as a rim all round the top of the neck. Three small pipes issued from this tube, and by sucking at one and stopping the others with the fingers a good draught could be obtained.

Also of Lambeth make are the wine-jugs inscribed with the name of the wine and a date. These may be seen in the museums and in many private collections.

Other places took up the idea later on with some success. In the Museum of Practical Geology there is a punch-bowl, attributed by Professor Church to Bristol, of tin-glazed ware, upon which are the following lines:—

"John Udy of Luxillion
his tin was so fine
it glidered this punch-bowl
and made it to shine
pray fill it with punch
lett the tinnors sit round
they never will budge
till the bottom they sound."

1731.

The English potters were not allowed to produce their Delft ware without competition, and it is remarkable that Van Hamme himself joined other manufacturers in petitioning for protection against the Dutch. Mr. R. W. Binns, in an appendix to his work on Worcester porcelain, gives the full text of two most interesting documents. One dated 1672 is a proclamation that no person should import "any kind or sort of Painted Earthen Wares whatsoever (except those of China, and Stone Bottles,

and Jugs) by way of merchandise," and enjoins grievous fines upon any offender. The second contains no reference to this proclamation, but is a response to the petition of Van Hamme and others, who stated that "the inevitable ruine of the petitioners, and many hundreds of poor Men, Women, and Children," was probable on account of the disastrous competition caused by foreign wares, and granting a further prohibition of all trade in foreign "Painted Earthen Ware as well White as Bleu, or any other Colours," commanding that all such should be "forthwith broken and destroyed." The selection of white and blue seems to point to the Delft ware, and indeed, as china and stoneware were expressly exempted, there was little else to prohibit.

CHAPTER II

THE STAFFORDSHIRE POTTERIES

THE origin of the Potteries of Staffordshire is lost in obscurity. Dr. Plot, who wrote in 1686, mentions some manufactories, stating that the greatest of these was at Burslem. Dr. Shaw says that this place must have been noted for pottery in Saxon times, because the modern name of Burslem is derived from the Saxon *Bwlwardeslæm*, which in English would be Bowl-quarry-loam, or more fully "the spot where is quarried and used clay for pots." Whether this be accepted or not, it is evident that potters were at work in North Staffordshire from very early times. Shaw states that there are documents in existence which imply "that

during many centuries considerable quantities of common culinary articles" were made.

The abundance of a coarse kind of clay and easy access to the coal supply contributed to make Staffordshire the home of the potter. Mr. Solon says that "clays and coal could be had by merely scratching the soil. The tilewright, a name given to the worker in clay whether he made tiles, butter-pots, or crocks, was at no loss for his materials."

In Plot's "Natural History of Staffordshire," mentioned above, a comprehensive account is given of the abundant supplies of clay. His words are worth quoting, though they have been repeated by most writers on pottery. The following extract is, however, abbreviated to avoid technicalities:—

"Potters' clays for the more common wares there are at Horsley Heath in the parish of Tipton; in Monway Field, where there are two sorts gotten, one of a yellowish colour, the other blewish, the former stiff and weighty, the other more friable and light, which, mixt together, work better than apart. Of these they make divers sorts of vessels at Wednesbury, which they paint with slip. But the greatest pottery they have in this county is carried on at Burslem, where for making their severall sorts of pots they have as many different sorts of clay, which they dig round about the towne, all within half a mile's distance, the best being found nearest the coale, and are distinguished by their colours and uses as followeth:—1. Bottle clay. 2. Hard fire clay. 3. Red blending clay. 4. White clay, so called it seems, though of a blewish colour, and used for making yellow coloured

ware, because yellow is the lightest colour they make any ware of.

"All which they call throwing clays because they are of a closer texture and will work on the wheel. Other clays they call slips, being of looser and more friable natures; these mixed with water they make into a consistence thinner than a syrup, so that it will run out through a quill; this they call slip and is the substance wherewith they paint their wares; whereof the 1. sort is called the orange slip. 2. The white slip. 3. The red slip. Neither of which clays or slips must have any gravel or sand in them. They prepare the clay by steeping it in water; then they bring it to their beating board, where they beat it till it be well mixed; then it is brought to the wageing board, where it is slit into flat thin pieces with a wire and the least stones and gravel picked out of it. This being done they wage it, *i.e.* knead or mould it like bread, and make it into round balls proportionable to their work, and then 'tis brought to the wheel and formed as the workman sees good."

Dr. Plot then goes on to say how the slip-painting is done, and that the glazing is effected by strewing upon the clay a lead ore called "smithum," a crude form of galena, but why so named is not related in history. Oxide of manganese was called "magnus," and seems to have been the only metallic colourant used besides the iron naturally present in the clays. The oven, says the historian, was "above eight foot high and above six foot wide," and this vast size appears to have astonished him. What would he have said about a modern

eighteen feet kiln? The ordinary wares were exposed to the "naked fire," but the leaded wares had to be enclosed in "shrager," modernised into "saggers." * "In twenty-four hours," says Dr. Plot, "an oven of pots will be burnt; then they let the fire go out by degrees, which in ten hours will be perfectly done, and then they draw them for sale, which is chiefly to the poor crate men who carry them at their backs all over the country." From this it is evident that early in the seventeenth century Staffordshire was a centre from which trade in crockery was pushed into other districts. All over England these "crate men" went, and the Burslem pots became famous. In 1661 an Act of Parliament was passed to control the size and weight of the



Staffordshire Tyg, Slip-painted.

butter-pots, which, according to Dr. Plot, were made at Burslem "of a certain size, so as not to weigh above six pounds at most and yet to contain at least fourteen pounds of butter." These pots

* This word is said to be a corruption of "safeguard," but from the old form of the spelling it would seem to be more probably derived from "shrag," to lop—hence, the part cut off, the waste or shred—the shrager being perhaps made from the waste scraps of clay. From the same source is the word shard, sherd, shred, or shord = broken ware, and as fragments of broken pots have long been used in the making of saggers, it is not unlikely that there is here a contributory derivation.

were so generally used that to this day "pot-butter" is spoken of in the Staffordshire districts.

In 1644 "5 potts of butter" were charged to the churchwardens at Uttoxeter, and Mr. Jewitt, who gives the quotation, also tells, upon the authority of Dr. Plot, how certain tricks were practised in filling, or pretending to fill, the butter-pots. The Act of Parliament spoken of above not only regulated the size and weight of the pot, but made provision for the detection of false packing. This is Dr. Plot's quaint description of the state of things: "The butter was before sometimes laid good for a little depth at the top and bad at the bottom, and sometimes set in rolls only touching at the top and standing hollow below at a great distance from the sides of the pot. To prevent these little Moorlandish cheats (than whom no people whatever are esteemed more subtile) the Factors keep a Surveyor all the Summer here, who if he have ground to suspect any of the pots, trys them with an instrument of iron made like a Cheese Taster, only much larger and longer, called an Auger or Butter boare, with which he makes proof (thrusting it in obliquely) to the bottom of the pot: so that they weigh none (which would be an endless business) or very seldom: nor do they bore it neither when they know their customer to be a constant fair dealer."

These butter-pots are now very rare. Probably the very ordinary nature of the ware caused them to be little thought of until too late.

Thus an impress of usefulness was given to the Staffordshire productions, and the potters went on supplying their neighbours with household utensils,

now and then, in a flight of fancy, elaborating some posset-pot, tyg, or cradle for a festive occasion. The possession of different coloured clays* in all probability suggested the decorations known as combing and marbling, and as a consequence there arose the admixture called Agate. These treatments depended for their success upon the uniform shrinkage of the clays, for were one colour to contract more than another there would of course be a separation which would entirely spoil the work.

The most usual pieces in combed and marbled ware were posset-pots and tygs. Of the former and their use Mr. Jewitt says: "Posset-pots have been made and regularly used in Derbyshire and the neighbouring counties from an early period until the present time. 'Posset' is an excellent mixture of hot ale, milk, sugar, spices, and sippets or, perhaps, more correctly speaking, dice of bread or oat-cake. In those counties this beverage was formerly almost, if not quite, universal for supper on Christmas Eve, and the posset-pot was thus used but once a year and often became an heirloom in the family. A small silver coin and a wedding ring were generally dropped into the posset," and as the pot was handed round each guest took a spoonful, searching without doubt for the token of prosperity or early marriage.

These parti-coloured wares are known by the names of marbled, combed, agate, and tortoiseshell,

* These clays are for the most part those underlying the coal measures, constituting the soil in which the forests of the carboniferous period grew.

the distinction being in the methods of manipulation; the first three were produced with coloured clays, the last by colouring in the glaze, but marbled ware had, sometimes, in addition to the clay, a tinted glaze, so that it may be said to have combined the two processes.

The introduction of colouring matter into the materials, other than that contained in the clays themselves, marked an important advance in the art of the English potter. Crude ores were at first used, such as ironstone and pyrolusite, and there is no doubt that the irregular composition of these led to much of the pleasing variety found in the early work. Success in staining the clay would doubtless lead to a similar experiment upon the glaze, and so the two ideas grew and developed.

The marbling was effected by a freehand use of light and dark slips, disposed so as to produce a mottled or marbled appearance; to this there was frequently added a design or inscription, and, later, tinted glazes were used to heighten the contrasts. Combing was carried out much as a house-painter works his imitations of grained oak or maple. Both light and dark clays were used, and by means of a simple tool these were blended the one into the other, or softened with fine veining. Professor Church says that two clays were used at once, one of them being much more fluid than the other; in fact it would appear that these potters tried every method by which they could impart to their work some variety that was not usually to be seen.

In making agate ware it was necessary that the

whole body of the piece should be composed of mixed clays, and hence in well made agate pieces the patterns inside and out are practically the same. The blending of the clays was done by hand, and at first simple blocks or bands of light and dark clay were placed in contrast. It was found, however, that the effect was better when the two colours were allowed to intermingle



Agate Ware.

to some extent, and steps were taken to induce this without destroying the individuality of the different clays. By cutting thin slices of dark clay and sandwiching them between light pieces, and *vice versa*, delicate wavy effects were produced; for of course as the mingled clays were forced into the recesses of the mould, the contrasting lines were bent and twisted in every direction.

The mottling caused by coloured glazes alone

is known as tortoiseshell, though from the fact that blues and greens were employed to some extent the name is not very accurate. Probably some of the early workers were limited to browns, and the name then given clung after the introduction of other colours. This ware had hardly the distinctive character of the preceding, and the fact that cheap imitations have been made ever since perhaps contributed to bring it into disrepute. It seems as though these early potters, while perfectly at home in clay, were much less so when dealing with the more artificial substance, glaze; their manipulative skill was, as things then stood, of a high order, but their scientific knowledge was an unknown quantity.

The Staffordshire potters thus jogged along in a quiet and unpretentious manner, making their butter-pots and their tygs and producing their combed and mottled wares, until about the year 1690, when there came to Burslem two brothers named Elers. They were of Dutch extraction, and had come over with William Prince of Orange. These men came of a noble Saxon family, and such was their social position that the Elector of Mentz and Queen Christina stood sponsors to the elder at his baptism (Solon).

Mr. Solon thinks that the Elers may have had the advice of Dwight of Fulham, who was himself of Dutch family, in their choice of a locality where fine clay could be found, otherwise he does not see how they should have pitched upon so secluded a spot as Bradwell Wood, near Burslem. Dwight had examined the clays in most parts of the country, and would probably have been aware

of the deposits of which the Elers took advantage. With regard to the present condition of things at Bradwell Mr. Solon writes: "Bradwell Wood is at the present day as lonely a spot as it was in the time of the Elers; it lies some distance from the road leading from Wolstanton to Burslem, and a farmhouse is the only building on the place. Dimsdale, where the Elers stored and sold their



Elers Teapot.

productions, is about a mile distant. It is a timbered building of the Elizabethan period, half manor, half farmhouse, with a small pool of water in the front and encircled with clumps of old trees. In the interior a very dilapidated wainscoted room is all that remains of what may have been in the past a noble building, and in that case, if they did really inhabit the hall, the aristocratic potters found there a home befitting their station.

At this moment, when the newly discovered telephone is used so extensively, it is curious to recall the story that the two places had been connected together for convenience' sake by a speaking tube made of clay pipes, through which a conversation could be carried on."

The clay at Bradwell is of a fine red colour, but the Elers were not content to use it merely as they found it, and here was the first great improvement effected by their enterprise. Formerly the clay was simply blunged up with water; the Dutchmen carefully strained their slip through fine sieves, thus vastly assisting the production of fine work. At this time they were also favoured by an increased demand for their delicate pieces, in that the use of tea was rapidly extending and both teapots and teacups were wanted on all sides.

The Elers manufactured their goods with great skill. They had acquired a good deal of knowledge, and their workmanship was of a high class. They used metal dies for the stamping of the neat embossed subjects which appear on their wares.

"On the surface, delicately lined over and finished on the wheel, a little lump of wet clay was applied at the place where a relief was intended, and stamped in the same way as the impression of a seal is taken upon wax. The excess of clay round the outlines was then carefully scraped off with a tool, and the flowers and leaves were connected together with stems made by hand, so that with the same tools the pattern might be greatly varied" (Solon).

In addition to this fine red ware the Elers made a black body, and further are said to have intro-

duced the process of salt-glazing into Staffordshire. It has already been mentioned that this art was practised by Dwight at Fulham, but when the Elers set up their kiln for the production of salt-glaze it is said that the potters of Burslem, then eight in number, gathered at Bradwell to know what could be the cause of the unusual smoke. Had there been any knowledge of the process before this, the potters would hardly have evinced so great a surprise. Salt-glazing had been practised in Germany and Holland, as has been already shown, for some considerable time, and it was further destined to accomplish great results in Staffordshire, for so popular did it become that upon certain days, when a large number of salt-glazing kilns were in operation, the streets of Burslem were almost impassable from the thick fog which prevailed.

The Elers were careful to exclude from the works any persons who might carry away the secrets of production. Idiots were at a premium, and only those who appeared deficient in wit were allowed to help.

Taking advantage of this, two potters named Astbury and Twysford feigned imbecility and succeeded in obtaining employment. They remained for some time, and watched secretly with eager eyes all the delicate manipulations. Both benefited by the experience, though the proceeding can hardly be called a creditable one.

Astbury afterwards gained a reputation by the introduction of flint into the earthenware paste, though he was forestalled by Dwight, who, says Mr. Chaffers, used ground flint as early as 1698,

or upwards of twenty years before Astbury's discovery.

It is said that the quality of flint was brought before the potter by an accidental chain of circumstances. He was travelling on horseback when he was delayed by an inflammation in the animal's eyes. To remedy this an ostler whom he consulted picked a flint from the road, and, having heated it to redness in the fire, threw it into cold water, when it broke up into pure white fragments. These were crushed and applied to the horse's eyes. But the potter saw more than this. He wanted a white infusible substance for his wares, and here it was. He immediately experimented, and found that he had not been mistaken, so that, notwithstanding the previous use of flint by Dwight, Astbury must remain credited with a discovery which has probably done more to improve the quality and possibilities of English earthenware than any other. Astbury did not fail to take advantage of the methods he had learned from the Elers. His moulded work rapidly improved in quality, and specimens of his productions are greatly valued to-day. This improvement, however, can only be regarded as such when compared with the efforts of his own countrymen. His work was decidedly coarser than that of the Elers, and he seems, moreover, to have been led away from purity and delicacy of style towards a taste more showy and less refined. He used the red clay of Bradwell Wood, but laid white embossments upon it, causing a strong contrast which is hardly agreeable.

Astbury was one of the great exponents of

salt-glazing. He used this process with great success, and his example was generally followed.

Twyford, who has already been mentioned as having gained admission, with Astbury, into the Elers' works, was chiefly noted for his imitations of his master—not that these are numerous in so far as they now exist, but the pieces that are known serve to show how great was the influence of the Dutch potter, even though those who came after could not approach him in the quality of their work.

The ideas emanating from the potters at this period were mainly suggested by their surroundings. It is true that some of the teapots were modelled from foreign objects, but the great bulk of the wares were purely English. The Elers seem to have



Astbury Ware.

greatly stimulated the trade in teapots. Numbers of these were made both in salt-glazed and lead-glazed pottery, and every historical event seemed to give birth to a family of new designs. The deeds of Admiral Vernon were enshrined in the Portobello ware, and later those of Lord Nelson in various mugs and services. Some well known types of pottery were created by Thomas Wheildon, who worked about 1740. He became known for his beautiful tortoiseshell glaze,

and for his pine-apple, cauliflower, and melon ware, upon which he used a fine green glaze. These wares were modelled in the form of the fruit or vegetable, and teapots, jugs, and other articles were worked out *en suite*.

The Toby jug was a type common at this time, and many are the amusing quips of which this worthy formed part. Dickens in "Barnaby Rudge" makes Gabriel Varden ask Dolly to "put Toby this way." The name is said to be derived from one Toby Fillpot or Philpot, "a thirsty old soul as e'er drank a bottle or fathomed a bowl," as the Toby-jug song runs. The original jug was supposed to be a portrait, and there is a great family likeness between all the Toby's: a jolly looking old gentleman is seated on a block, and from one lip of his three-cornered hat the liquor can be poured. These jugs were in great demand at one time, and were decorated in various fashions, but the main features were the same in almost every case.

The zenith of early Staffordshire work, prior to the advent of Josiah Wedgwood, was reached in the beautiful salt-glazed stoneware decorated on the glaze. Some of this ware is so near to porcelain that a line of demarcation can hardly be found; the thin pieces are translucent and many of them are almost pure white. The idea of decorating this ware with enamels or muffle colours* doubtless originated in the desire to imitate the porcelain being successfully made at Bow, Chelsea, and Worcester, and, as in the production of these manufactures, Oriental taste prevailed. At first

* Colours fired at a low temperature in a muffle kiln.

no decorator could be found in Staffordshire who could undertake fine painting; all the previous artistic work had been moulded or at least developed on the clay. The ware as fired and glazed was



Toby Jug.

a new substance, and the old treatment could no longer obtain. Two painters came from the Low Countries and practised their art near Burslem, and to them are due many of the Chinese scenes

found on this ware. Tea, though rapidly increasing in popularity, was still a luxury, and many dainty little caddies, painted and lettered, were supplied to form part of the tea-equipage so much appreciated by high-born dames. Sometimes the early embossments were laid on and afterwards coloured by the enameller, sometimes the plain surface of teapot or bottle was completed by a delicate scene painted in exquisite taste. The ware, just relieved from coldness by the delicate grey tint of the clay, gave to the colours a jewel-like quality, and no one can look upon a piece of this work without appreciating the excellence at which Staffordshire had arrived.

CHAPTER III

JOSIAH WEDGWOOD

POTTERY always possesses a human interest. Bearing the impress of the potter's hand, the clay seems to partake of his personality, and thus it is that men have been able all through the history of the art to give to their work certain qualities which are special and peculiar to clay.

Of these men of mark it is generally agreed that Josiah Wedgwood is the one to whom is due the elevation of the work of the potter from a haphazard treatment of natural substances to a systematic development of the resources of nature. In the foregoing chapters a review has been taken of the state of the potter's art in England up to Wedgwood's time. What he did for that art, and how he did it, are subjects that have been

exhaustively dealt with in more important works, but here the effort will be made to state in a simple manner what were the qualities which enabled him to outrival all his competitors, and to reach the top of the ladder of fame.

Josiah Wedgwood was not only a born potter, but he was a potter by birth, for the two are by no means synonymous. Gilbert Wedgwood, his great-great-grandfather, was in business at Burslem in the seventeenth century; his great-grandfather, his grandfather, and his father, all Thomas Wedgwoods, and his great-uncle John, were also potters. Josiah was the youngest of the family, and was born in July 1730. Taken early from school on account of the death of his father, he was bound apprentice to his brother Thomas, and began work as a thrower. The business of the thrower was then of more importance even than now; it was he who worked at the potter's wheel, and gave the first shape to the clay. Every piece of hollow form was, almost without exception, "thrown" then, and it was by attention to this particular branch that Wedgwood, in after life, produced his beautiful vases. In modern times, alas! the thrower is being superseded by the mechanical "jolly," which simply presses a ball of clay into a revolving mould. But this is a digression. The young Wedgwood was not destined to work long at the wheel, for an attack of small-pox kept him for some time a prisoner, and when he recovered it was found that a remnant of the poison had seated itself deeply in his right leg. This incapacitated him from following his intended occupation, and caused him much suffering in

later years ; for when he had nearly reached middle life he had the misfortune to injure the diseased limb, and lest his life should be endangered, he put himself in the surgeon's hands, and the leg was amputated.

In all probability that which Wedgwood and his friends regarded as a serious misfortune resulted in great benefit to the pottery of England, for being debarred from work at the wheel, he turned his attention to the scientific and artistic principles underlying his art. Professor Church states that Wedgwood could not have been much of a chemist, because very little was known of chemistry in his time, and what there was would not have helped him much. The chemistry of that day was almost entirely in the hands of the doctor and the druggist, and had more bearing upon medicine than upon commerce. But notwithstanding this the inventive and inquiring mind of young Wedgwood soon evolved from the chaos then existing in the minds of potters a system and an order worthy of the highest reputation in science.

Mr. Gladstone has said : " It is not often that we have such palpable occasion to record our obligations to the small-pox, but, in the wonderful ways of Providence, that disease, which came to Wedgwood as a twofold scourge, was probably the occasion of his subsequent excellence. It prevented him from growing up to be the vigorous workman, but it set him considering whether, as he could not be that, he might not be something else, and something greater. It sent his mind inwards ; it drove him to meditate upon the laws and secrets

of his art, and the result was that he arrived at a perception and grasp of them which might have been envied by an Athenian potter. Relentless criticism has long since torn to pieces the old legend of King Numa receiving in a cavern, from the Nymph Egeria, the laws which were to govern Rome, but no criticism can shake the record of that illness and that incapacitation of the boy Josiah Wedgwood which made for him a cavern of his bedroom and an oracle of his own searching, meditative, fruitful mind."*

Even before Wedgwood's apprenticeship had expired he began to experiment—indeed so much was this the case that he appears to have drawn upon himself the censure of his brother, who could not see why the lad should be desirous of doing more than his ancestors had done. Josiah was, however, not to be denied, and even in his early years the foundation of his ultimate success was laid. He "came out of his time" in 1749, but continued to work for his brother as a journeyman for some two years. On coming of age he received the sum of £20 which had been left to him by his father, and with this he determined to launch out for himself. His first venture was in partnership with Mr. Harrison at Stoke, but this only lasted for two years.

In business at Fenton Low at that time was an enterprising potter named Thomas Wheildon. He had begun in a very small way, and used to carry his samples on his back like a common pedlar. He made his mark in goods for mounting, such as knife-handles and snuff-boxes, in mottled and

* Address at Burslem, October 1863.

agate wares, and so successful was he that in 1749 he was able to build a large addition to his manufactory. Wheildon's name will always be remembered as that of the man who more than any one else encouraged the clever young potters of his day. Spode and Astbury, Greatbatch and Edge, Heath and Marsh, are names to conjure with in the history of the potteries, and all of these were at one time or another employed by him, to the mutual advantage of master and man. And by no means the smallest point to the credit of Thomas Wheildon is that he was quick to recognise the energy and ability of Josiah Wedgwood.

In 1754 a partnership was entered into between Wheildon and Wedgwood, and together these two set themselves to advance their art. It was doubtless during this partnership, which existed for five years, that Wedgwood gained much of his practical experience. The methods used by Wheildon were the most advanced of the time, and he, almost alone, had firmly resisted the cheapening tendencies of other makers. It must therefore have been a great advantage to young Wedgwood to work with a man who was so far of the same mind as himself.

The partnership ended, Wedgwood took the most important step of his life and entered upon a manufactory of his own. He seems first to have rented the "Churchyard" Works at Burslem, but shortly afterwards he also took possession of the "Ivy House" with the adjoining works. Both these places were the property of his relatives, and at the former he had himself been born and apprenticed.

Wedgwood speedily introduced new methods

into his manufactories, not only with regard to the making of the goods, but also in the management of his workpeople.

At that time there was no system in factory or workshop; men did much as they pleased and made much what they liked. To this freedom a good deal of the originality in the early wares was due, but it was not conducive to progress, inasmuch as there was no scope for the master-mind. Wedgwood changed all this; he personally superintended all the work, and arranged for a division of labour, which had not before been thought of. Hence each workman was enabled to become expert in his special branch, and great technical perfection became attainable. There are some who object to this, and say that one workman should finish one piece of work, no matter how imperfect the technique. This plan was tried in the old days, and but for Wedgwood and like-minded progressive men might have prevailed still, and the result would be that the potteries of Staffordshire would not yet have emerged from swaddling clothes. It is true that in modern times the opposite extreme is being reached, but for this there are other reasons and other remedies.

Not content with working two manufactories at once, which though they were small would have taxed all the energy of an ordinary man, Wedgwood must needs enter into negotiations for the tenancy of a third. This was rendered necessary by the rapid growth of his business, which growth was itself a direct consequence of his superior ability.

The new premises were known as the Brickhouse Works, but the workmen soon named them anew. As already mentioned, the rule of the average factory was then very lax, and it was the custom to call the hands together in the morning and after meals by blowing a horn, of which not much notice was taken. At the Brickhouse Works Wedgwood erected a turret to contain a large bell, the sound of which travelling far and wide strictly regulated the hours of work. This novelty was suggestive, and the place was quickly dubbed the "Bell Works." It is hardly necessary to point out that in certain districts at the present time the bell is perhaps more extensively used than anything else for the purpose to which Wedgwood was the first to apply it.

It was in 1762, shortly after his occupation of the Bell Works, that Wedgwood produced his famous Queen's ware, and Mr. Jewitt relates that the reason for the ware being so named was that, upon an important and interesting event which took place in the Royal household, the potter presented to Queen Charlotte a caudle and breakfast service of cream-coloured earthenware. The Queen was delighted, and at once asked to have a table service of the same ware. Samples were submitted, and the selected pattern was named the Queen's pattern, Wedgwood subsequently naming the cream-coloured earthenware Queen's ware. At this time the title of "Potter to Her Majesty" was bestowed upon him, and success was assured.

Queen's ware was a fine soft pottery made from the best procurable clays and containing some

flint. It was made of very light substance, and every piece was finished in a clean and delicate style. It was Wedgwood's boast that his Queen's ware plates could be piled up twelve dozen in one "bung" without falling over, a quality which perhaps only a potter can fully appreciate.



Wedgwood's Queen's Ware.

Before long the necessity of having this ware decorated in some way became apparent. At that time no painters had been employed at any of Wedgwood's works, but the new process of transfer printing practised at Liverpool by Sadler and Green offered certain advantages. Wedgwood,

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always enterprising, conceived the idea of sending his ware to Liverpool to be printed, and this he did with much success. Once a fortnight a waggon started from Burslem with a load of plain wares, returning in due course with the previous consignment, upon which suitable prints had been placed. But all this meant harder work for the director of these details, and also more business. So great was the increase that he was compelled to take into partnership, first his cousin, Thomas Wedgwood, who had already been superintending the production of the Queen's ware, and subsequently Thomas Bentley of Liverpool, upon whom, as a man of cultured and superior taste, Wedgwood greatly relied in the prosecution of his ornamental works. Besides this increase in strength, he determined upon an entirely new manufactory. The old-fashioned ovens and workshops were not suited to his advancing requirements, and in addition to this the increasing number of workpeople employed found great difficulty in obtaining decent habitations. Wedgwood projected a new works, to be surrounded with well built healthy homes. A site was found on what was known as the Ridgehouse Estate, some two miles from Burslem, and here the new manufactory was planned. Workshops and kilns of the newest types were erected, a house for Bentley was begun as well as cottages for the workpeople, and the place began to assume the character of a model pottery. Wedgwood thought much over a name for the place, and eventually decided to call it "Etruria," after the province where so many fine vases had been found.

The opening of the Etruria Works was commemorated by Wedgwood himself shaping a series of vases while Bentley turned the wheel. Some of these vases are now in the possession of Mr. Francis Wedgwood of Barlaston, and bear the inscription: "June XIII, MDCCLXIX, One of the first day's productions at Etruria in Staffordshire, by Wedgwood & Bentley."

Mr. Jewitt quotes from Wedgwood's catalogue the following descriptions of the different wares made by him:—

"1. A terra-cotta: resembling porphyry, granite, Egyptian pebble, and other beautiful stones of the silicious or crystalline order.

"2. Basaltes or black ware; a black porcelain biscuit of nearly the same properties with the natural stone; striking fire with steel, receiving a high polish, serving as a touchstone for metals, resisting all the acids, and bearing without injury a strong fire; stronger indeed than the basaltes itself.

"3. White porcelain biscuit, of a smooth, wax-like surface, of the same properties with the preceding, except in what depends upon colour.

"4. Jasper; a white porcelain biscuit of exquisite beauty and delicacy, possessing the general properties of the basaltes, together with the singular one of receiving through its whole substance, from the admixture of metallic calces with the other materials, the same colours which those calces communicate to glass or enamels in fusion—a property which no other porcelain or earthenware body of ancient or modern composition has been found to possess. This renders it peculiarly fit for making cameos, portraits, and

all subjects in bas-relief, as the ground may be of any particular colour, while the raised figures are of a pure white.

"5. Bamboo or cane-coloured biscuit porcelain, of the same nature as No. 3.

"6. A porcelain biscuit remarkable for great hardness, little inferior to that of agate. This property, together with its resistance to the strongest acids and corrosives, and its impenetrability by every known liquid, adapts it for mortars and many different kinds of chemical vessels.

"These six distinct species, with the Queen's ware already mentioned, expanded by the industry and ingenuity of the different manufacturers into an infinity of forms for ornament and use, variously painted and embellished, constitute nearly the whole of the present fine English earthenwares and porcelain, which are now become the source of a very extensive trade, and which, considered as an object of national art, industry, and commerce, may be ranked amongst the most important manufactures of the kingdom."

Nothing could stand still in the hands of this remarkable man. Invention succeeded invention and improvement followed improvement. The climax was apparently reached with each novelty, but so many were the departures made that even in the light of history it is difficult to say which was his greatest work. The Queen's ware did perhaps most to advance the general trade of the country, for it has been the standing type of light earthenware ever since its production, but that which has made the name of Wedgwood best known is his jasper ware.

Originally brought out as a fine white terra-cotta; this ware was soon found to be capable of receiving the most delicate impressions and the softest of tints. Sulphur moulds were used to secure sharpness of detail, and, engaging the services of the best modellers, Wedgwood began the series of cameos and gems which are everywhere wedded to his name. Amongst those who worked for him at this time were Flaxman and Hackwood: the former devoted himself mainly to the finer work; the latter modelled the busts which were so magnificently produced in black basalt. In this ware Wedgwood builded better than he knew, for even he could hardly have foreseen the exquisite *patina* acquired by his busts and vases in the course of years. This basalt was an attempt to reproduce the black groundwork of the Greek potters, but in the carrying out of the idea Wedgwood surpassed his masters. The Greek vases were made of red clay, and the black surface was merely a glaze or smear. The Staffordshire works were solid black, and made of a clay so dense that it required no glazing.

In most collections of Wedgwood ware some of these busts may be seen, and those who have had the privilege of examining them will realise the valuable qualities of this ware better than it is possible to convey by any verbal description. Flaxman as an artist has been somewhat decried of late years, but whatever merit or demerit may attach to his drawings from the antique, there can be no question as to the beauty of his modelling in the gems which he executed for Wedgwood. It is not always possible to trace the originator of

this fine work, as many artists were employed who worked in Italy, but certain pieces are known as Flaxman's, amongst others the vase engraved which represents the Apotheosis of Homer. It was for a vase from the same mould, but with white figures on black, that seven hundred guineas, the highest price realised in modern times for a Wedgwood vase, was paid.

Mr. Chaffers says that the jasper ware was made in seven colours, blue, lilac, pink, sage-green, olive-green, black, and yellow, the last named being very rare. In combination with these colours the pure white jasper served to give relief, and the colours were, almost without exception, used with consummate skill. As mark Wedgwood almost always used his own name impressed in capital letters; there are to this some slight exceptions, which are fully explained in the various published biographies.

By many the great work of Wedgwood's life is believed to be the Portland vase; others decry it on the ground that it is only a copy and in a different material. The original Portland or Barberini vase was made of glass, the body dark blue approaching to black, the embossments white. The two layers had been fused together in the manufacture, and the white carved away so as to leave the required subject in bas-relief, the dark background supplying the shadow by its effect upon the partial transparency of the white. Mr. Chaffers gives the following history of this vase:—

“In April 1787 the Portland Museum, the property of Margaret Cavendish, Duchess Dowager of Portland, was sold by auction at her house; the sale concluded with the celebrated Barberini vase,

which was purchased of the Barberini family by Sir William Hamilton, who sold it to the Duchess of Portland. It is thus described in the catalogue, lot 4,155: 'The most celebrated antique vase, or sepulchral urn, from the Barberini cabinet of Rome; it is the identical urn which contained the ashes of the Roman Emperor Alexander



Wedgwood's Black Basaltes.

Severus, and his mother Mammæa, which was deposited in the earth about the year 235 after Christ, and was dug up by order of Pope Barberini, named Urban VIII., between the years 1623 and 1644. The materials of which it is composed emulate an onyx, the ground is of a rich transparent amethystine colour, and the snowy figures which adorn it are in bas-relief, of workmanship above all encomium and such as cannot but excite

in us the highest idea of the arts of the ancients. Its dimensions are $9\frac{3}{4}$ inches high and $21\frac{3}{4}$ inches in circumference.' This gem of ancient art may still be seen in the gold room of the British Museum, though broken to fragments many years ago by a mischievous visitor and afterwards carefully pieced together."

Wedgwood attended the Portland sale with the object of purchasing this vase, but the young Duke of Portland was determined to retain it in the family. The story goes that these two bid against one another for some time, but that when £1,000 had been exceeded the Duke approached the potter to inquire for what reason he wanted the vase. Wedgwood at once said that he wished to make a copy of it, whereupon the Duke frankly offered the loan of the piece if the price were not further contested. Wedgwood agreed, the Duke bought the vase for £1,029, and handed it over.

When the enthusiast reached Etruria with his treasure he at once began to consider how the copy was to be made. His materials were not the same as those of the vase, but he nevertheless made a beginning. A rich black-blue ground was chosen, but the difficulty lay not so much in the materials as in the execution. An accurate model was made, and fifty replicas were finished, each being subscribed for at fifty guineas, but it is said that even the sum thus realised came far short of the cost of production. Several of these original replicas are now to be found in museums and private collections, and many others have since been made.

Notwithstanding his multifarious duties as a

potter, Wedgwood found time to engage in many public and philanthropic works. He was quick to grasp the needs of the public service. The necessity of good roads early aroused his attention. The carriage of pottery by means of packhorses was, before his time, general, with many resulting accidents. The by-ways were so bad that no wheeled vehicle could traverse them in wet weather. Wedgwood brought forward the matter of roads, and, in spite of the opposition of certain publicans who stood to gain by an occasional breakdown, succeeded in getting the matter attended to in some small degree.

He was an enthusiastic supporter of the scheme for a canal from the Trent to the Mersey, subsequently called the "Grand Trunk Canal," and subscribed £1,000 towards the preliminary expenses. Of this undertaking he was appointed treasurer, and he cut the first sod with his own hands.

In 1764 Wedgwood married a lady of his own name, Sarah Wedgwood, a distant cousin. She seems to have made an ideal wife, and was a great strength to her husband, especially in the terrible shock caused by the amputation of his leg. She nursed him most devotedly, and at the same time carried on all his correspondence.

Wedgwood's life was almost a continual suffering. From the attack of small-pox in his youth to the gangrene of the jaw which caused his death in 1795, he was practically in constant pain, and yet his marvellous spirit enabled him to rise above his bodily ills and to accomplish for the good of his country that for which she will be for ever grateful to his memory.

CHAPTER IV

ENGLISH PORCELAIN

THE passion for porcelain which prevailed upon the Continent of Europe during the eighteenth century had to some extent its counterpart in England, and to such a point of excellence was the manufacture carried that when the promoters of the proposed works at Vincennes approached the King for an exclusive patent, they alleged that the new manufacture of porcelain in England had drawn a considerable amount of money from France. These French potters, if indeed they were practical men, also paid England the compliment of saying that the porcelain was "*plus belle que celle de Saxe.*" The ware here alluded to could only have been that made at Bow, for in the year 1745, when the petition was drawn up, the Chelsea factory had only just begun work.

The manufactory at Bow, in the East of London, was established, says Mr. Chaffers, about 1730; but the first positive evidence of its existence occurs in 1744, when Edward Heylin and Thomas Frye took out a patent for the manufacture of porcelain. They stated that the main ingredient in their porcelain body was an earth, "the produce of the Cherokee nation in America, called by the natives *unaker.*" This seems to have been practically identical with the kaolin used by the Chinese and by Böttcher at Meissen, but the patentees at Bow did not employ it so extensively as did these. The ware was a compromise between

a hard and a soft porcelain—harder at first when the “unaker” was a novelty, but softened as it was found that this expensive clay could be used in smaller proportions. A frit was made much in the French manner, and a fine porcelain ware was produced. Professor Church has pointed out that the Bow porcelain of later date contained as much as forty per cent. of bone ash, and this is confirmed by a second patent taken out by Frye in 1749, in which he states that “animals, vegetables, and fossils, by calcining, grinding, and washing, are said to produce an insoluble matter called virgin earth.” He evidently knew that bone was the real source of this “virgin earth”; but he introduced the idea of vegetables and fossils to obscure the real nature of his material.

Unaker seems to have been abandoned in this second porcelain, and instead there was introduced “a proportion of pipeclay.” This was the first time that bone was used as a material for porcelain-making, but it has ever since been considered an indispensable ingredient in English porcelain. Some writers state that bone ash acts as a flux, but this is not the case. Calcium phosphate, of which calcined bone almost entirely consists, is practically infusible, and there is no doubt that its function in a porcelain body is to uphold the mixture, and to enable it to endure a more severe fire than it would otherwise do.

The Thomas Frye who was thus concerned in the manufacture of porcelain at Bow was an Irishman by birth. He was trained as an artist, and became celebrated for his portraits in mezzotint. He worked in the management of the

Bow manufactory for about fifteen years, when his health broke down, and he was obliged to resume his occupation as an engraver.

In 1750 Messrs. Weatherby & Crowther gained possession of the works. Some think that they were the original proprietors, and that Frye was simply the manager of the works, but there is no definite evidence of this. A good business seems to have been done, for three years later an advertisement appeared in Aris's *Birmingham Gazette* for painters "in the blue and white potting way," and for "painters brought up in the snuff-box way," stating also that "at the same house a person is wanted who can model small figures in clay neatly."

An interesting light is thrown upon the work at Bow by a document in the British Museum which accompanies a Bow punch-bowl, and which was written by Thomas Craft, who states that the bowl was painted by himself about 1760 in what was called the old Japan taste. He also says that about three hundred persons were employed, including ninety painters. The model of the building in which the work was done was copied from a building in Canton, and perhaps for this reason the works were named "New Canton." The circular inkstand engraved bears the inscription, "Made at New Canton, 1751." Bow porcelain is noted for its delicate creamy paste and tender glaze. There is often great difficulty in distinguishing it from other manufactures, especially as the pieces are frequently unmarked. There are, however, certain characteristics of Bow work, such as the embossed hawthorn and the

partridge pattern,* which serve to distinguish it. The latter appears on the cup and saucer in the illustration.

Mr. Chaffers gives extracts from a Bow memorandum book in the possession of Lady Charlotte Schreiber from which he deduces that advantage was taken, as in Wedgwood's case, of the printing carried on at Liverpool to have the Bow ware so decorated. The entries refer to "a *printed* mug"



Bow Porcelain.

and a set of "*printed* teas." The china must have been sent to Liverpool for printing, for so far no evidence is forthcoming to show that this process was carried on at Bow.

About the year 1775 William Duesbury, who seems to have been desirous of absorbing all competing works, purchased the manufactory at Bow, and transferred the whole of the moulds and other plant to Derby. Here the individuality of

* The partridge or quail pattern is not absolutely confined to Bow.

the work was lost, and Bow porcelain became a thing of the past.

An interesting and important link between the old and the new was forged by the discovery in 1867 of the remains of an old "shord-ruck," or rubbish heap, on the site of the Bow works. Upon carrying out some excavations at the match factory of Messrs. Bell & Black, the workmen unearthed a quantity of broken fragments of porcelain. Useless at the time the manufactory was working, these morsels have revealed to the modern collector much that before was hidden. There were brought to light patterns that had been attributed to other places and moulds of embossments over which controversy had raged, and thus many debated questions were settled. To Mr. Higgins is due the credit of having patiently collected and arranged these fragments, many of which are figured in the more important works on English porcelain.

Several marks are known to occur on Bow porcelain, the most usual being an anchor and a dagger combined in different ways.

The literature of the Chelsea works is more voluminous than that relating to Bow, but is still very fragmentary. There is no doubt that work was in progress in the year 1745—yet the pieces marked with this date are not experiments, but evince some considerable skill. Following the example of Continental Princes, King George II. interested himself in the Chelsea works and afforded the promoters much encouragement. The Duke of Cumberland did more. He personally watched over the progress of the manufacture, and

devoted a portion of his means towards the perfecting of the work. In the Lansdowne MSS. in the British Museum there is a document in which a statement is made by some unnamed person claiming to be the "undertaker" of the Chelsea manufactory. He alleges that certain porcelain works being patronised by Royalty abroad, and thus working under most favourable conditions, caused great difficulties to the Chelsea works by reason of the importation of their goods. The import of porcelain was then prohibited except for private use, and the object of this "undertaker" was to get the law enforced, for it would appear that extensive evasions of the prohibition were constantly practised, and that foreign goods entered "for private use" were publicly exposed for sale. History does not state whether his appeal was successful, but the Chelsea manufactory continued to flourish.

Nicholas Sprimont, a foreigner—Professor Church thinks he was of Flemish nationality—was director of the works in 1750, afterwards becoming sole proprietor, and it is not unlikely that he was the author of this appeal.

The mode of sale seems to have been largely by means of auction and advertisement—for instance, in 1754: "To be sold by auction by Mr. Ford at his great room in St. James', Haymarket. All the entire stock of Chelsea porcelain toys brought from the proprietor's warehouse in Pall Mall; consisting of snuff-boxes, smelling-bottles, and trinkets in various beautiful shapes"; and in 1757: "The Public is hereby acquainted that the Chelsea Porcelain Manufactory has been very much retarded

by the sickness of Mr. Sprimont; nevertheless several curious things have been finished, and are now exposed to sale at the warehouse in Piccadilly, with the lowest price for ready money fixed on each particular. All warranted true enamel." Some of the toys and similar articles thus advertised are to be seen in the beautiful collection amassed by the late Sir A. Wollaston Franks, and now in the British Museum.

In 1764 Sprimont endeavoured to sell the whole manufactory, as he was "advised to go to the German Spaw," but he does not seem to have found any one willing to purchase, for the sale was not then completed. He was, however, evidently in bad health, and continued to look for a purchaser.

The famous Dr. Johnson seems to have thought that he could make china, for in Faulkener's history of Chelsea it is stated on the authority of a foreman that he "applied to the directors of the china works, and was allowed to bake his compositions in their ovens in Lawrence Street. He was accordingly accustomed to go down with his housekeeper about twice a week, and stayed the whole day, she carrying a basket of provisions with her. The Doctor, who was not allowed to enter the mixing room, had access to every other part of the house, and formed his composition in a particular apartment, without being overlooked by any one. He had also free access to the oven and superintended the whole process, but completely failed both as to composition and baking, for his materials always yielded to the intensity of the heat, while those of the company came out of the furnace perfect and complete. The Doctor retired in disgust though

not in despair, for he afterwards gave a dissertation on this very subject in one of his works, but appeared to be still ignorant of the nature of the operation. He seemed to imagine that one single substance was sufficient, while the fact was that the company used sixteen." Dr. Johnson is credited with the remark that porcelain was "as dear as silver," and probably after his numerous failures he did not wonder at it.



Chelsea Porcelain.

In 1769 another attempt was made to sell the manufactory by auction, and the advertisement attracted the attention of Josiah Wedgwood, who wrote to Bentley that, "The Chelsea moulds, models, etc., are to be sold. There's an immense amount of fine things," and to Cox: "Pray inquire of Mr. Thomas whether they are determined not to sell less than the whole of the models, etc., together. If so, I do not think it would suit me to purchase. I should be glad if you could send

me any further particulars of the things at Chelsea." It was decided, however, to sell the whole concern in one lot, and a purchaser was found in Mr. Duesbury of Derby, who afterwards became the owner of the Bow works also. Duesbury continued the Chelsea manufactory until the year 1784, when he removed all the plant to Derby and pulled down the old place entirely.

Mr. Chaffers gives the following opinion of Chelsea porcelain, which is generally endorsed by those who know it:—

"Chelsea porcelain ranks highest for beauty of decoration and careful finish, and is esteemed in proportion to its merit as a work of art. Some productions of the Chelsea works bid fair to rival those of the far-famed Imperial manufactory of Sèvres, at any rate in the estimation of English connoisseurs, and the prices at which some have been recently sold have nearly equalled the sums paid for the finest specimens of Sèvres.

"The two most important examples of Chelsea porcelain, both from their size and quality, are undoubtedly the 'Chesterfield' vase and the 'Foundling' vase. These veritable *chefs-d'œuvre* are two feet high, oviform, with bold rococo scroll handles, surmounted by dome-shaped covers: they are both exquisitely painted with classical or pastoral subjects on white medallions, and they are equal, if not superior, to any other contemporaneous work at home or abroad."

The former of these vases passed into the possession of the late Earl of Dudley in 1868. The latter remained at the Foundling Hospital, to which it had been presented by Dr. Garnier

in 1763, until recent years, when it was purchased to join its companion at Dudley House.

Chelsea figures are more popularly known and more generally admired than the vases. They were finished for the most part with loving care, and express perfectly the dainty taste of the period. Most museums contain specimens of these; the pair in the engraving are in the Geological Museum in Jermyn Street. The usual Chelsea mark is an anchor.

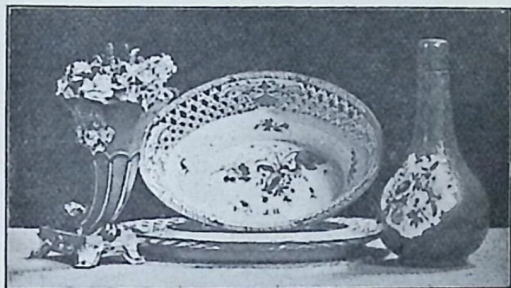
It was in the year 1756 that William Duesbury became connected with the Porcelain Works at Derby. Who the originator of these works was is not certainly known. Mr. Jewitt believes that the first porcelain was made there by a foreigner, but his conclusions are questioned by other writers. The work must have been well advanced by the time Duesbury entered into partnership, for the same year there was a large sale by auction of Derby china in London, which lasted four days. Such a sale could only have been possible after some years of manufacture, and this tends to confirm the tradition that the works were established about 1751. Prior to this there had been, at Cockpit Hill, an earthenware manufactory which was carried on by a Mr. Heath, who appears also to have been concerned with Mr. Duesbury in the making of porcelain. Heath's name disappeared before long from the concern, and under the Duesburys the finest examples of Derby porcelain were made. It is remarkable that there was a William Duesbury at the head of the Derby works for three generations. The first entered into partnership in 1756 and died in 1786. The second

entered the firm as his father's partner in 1785, and after the death of the elder man he, being in delicate health, took into partnership Mr. Michael Kean, who was skilled as an artist and who greatly helped the development of fine work. The second William Duesbury died in 1796, and Mr. Kean was left to manage the business alone until the third William Duesbury succeeded to the position held by his grandfather and father before him.

It was the first Duesbury who purchased the manufactories at Chelsea and Bow, the former in 1769, the latter in 1775, thus becoming almost a monopolist in English porcelain. He effected the first great advance in the business, and handed it down to his son in a flourishing condition. A high standard of work was maintained, and nothing at all imperfect was sold ; but later on, in 1815, when possibly, in the third generation, the proprietor began to tire of his work, he leased the manufactory to one Robert Bloor, who had been a clerk in the establishment during his father's time. This man had no soul above money-making, and finding large stocks of ware which had been laid aside as imperfect by the Duesburys, he began to decorate and offer for sale goods that were not calculated to sustain the reputation which Derby porcelain had acquired.

When the first William Duesbury purchased the works at Chelsea, he continued the manufactory there for some time, as already stated ; but eventually the moulds and plant were removed to Derby, and there the production of "Chelsea-Derby" porcelain was begun. This consisted in making the old Chelsea models in Derby paste, but it is not easy

to distinguish between pieces from the same moulds, for the early pastes were very similar in character. Later the Derby pastes became harder. Professor Church states that bone was used after the very first years, and that China clay was eventually adopted. The same writer distinguishes the periods of Derby work by the names Derby, Chelsea-Derby, Crown-Derby, and Bloor-Derby, and says that of the first period the mark, if any, has not been



Old Derby Porcelain.

ascertained. In the second period, 1769—1773, the mark was an anchor in gold with the D of Derby or Duesbury, and later a crown with or without cross batons and dots was added.

It would appear that after the removal of the Chelsea works to Derby it was decided to attempt the production of figures and statuettes after the Chelsea manner. Numbers of beautiful models were completed, and Derby figures attained a considerable reputation. In character these were

somewhat more robust than those of Chelsea. The type was more truly English, even though the pieces were sometimes marked with the crossed swords of Dresden. These figures were for the most part beautifully coloured, but the excellence of the modelling seems to have led to the sale of a quantity of specimens in white biscuit ware. Some fine examples of these biscuit figures are known. The crown and D are sometimes found upon them incised in the clay. The date of manufacture may be seen from their appearance in a catalogue published in 1771.

After the death of Robert Bloor the works at Derby rapidly declined, and the establishment was finally closed in 1848.

At Worcester the manufacture of porcelain was begun in 1751, and, thanks to the assiduous labours of Mr. R. W. Binns, F.S.A., who for the last forty-five years has been closely identified with the Worcester works, the story has been fully unfolded. In the first partnership deed, dated June 4th, 1751, the proprietors, fifteen in number, claimed to carry on the "Worcester Tonquin Manufacture," showing that the Chinese idea had inspired Worcester as well as Bow. Worcester porcelain was the invention of Dr. John Wall, who was held in repute as a local practitioner. Like the other early porcelain-makers, he had no natural clay with which to work, but composed a frit which he first mingled with pipe-clay and afterwards with "soapy rock" or steatite.

Dr. Wall, in conjunction with Mr. William Davis, an apothecary, seems to have undertaken his experiments from a love of such things, and without any immediate idea of a manufactory; but it so

happened that political rivalries ran high in Worcester, and the expense of contested elections was very great. The Georgian party were anxious to withstand the Jacobites, and in order to increase their voting strength they resolved upon a manufactory of some description. They came into contact with Dr. Wall, who was politically in sympathy with them, and the scheme for a porcelain works was launched.

Dr. Wall and Mr. Davis were allotted certain shares for their invention, and amongst the other proprietors was Edward Cave, the originator of the *Gentleman's Magazine*. The literary influence thus available was of the greatest possible use to the young industry, for in 1752 a notice of the manufactory, accompanied by an illustration of the works, appeared.

The first Worcester work was based directly upon the Chinese. Small cups without handles were decorated with plain blue under the glaze in Oriental taste, and for some time this idea seemed to prevail, but it is quite evident that the men who were at the head of the concern were determined to press forward. Transfer printing, the actual history of which will be given in another chapter, was taken up and vigorously pushed, sometimes in furtherance of the political aims of the proprietors, sometimes on purely artistic lines.

The engraver Robert Hancock was engaged, and some of his best work is found on Worcester ware. Amongst other pieces decorated in this manner were mugs and jugs with portraits of the King of Prussia. Thomas Carlyle refers to one of these

as "a mug got up for temporary English enthusiasm and the accidental instruction of posterity," and speaks of the engraving as "a diligent potter's apotheosis of Friedrich."

With reference to this portrait there appeared in the *Worcester Journal* in January 1758 some lines with this ascription:—

"On seeing an armed bust of the King of Prussia curiously imprinted on a porcelain cup of the Worcester manufacture, with Fame sounding the trumpet and an emblematical representation of his victories. Addressed to Mr. Josiah Holdship."

The lines began—

"Here, taught by thee, we view with raptur'd eyes
Gracefully bold the Prussian Hero rise,"

and the author added—

"What praise is thine, ingenious Holdship! who
On the fair Porcelain the portrait drew."

Holdship had little or nothing to do with the work, and this seems to have been well known in the city, for the editor of the paper after printing the lines appended the following:—

"Extempore on the compliment of imprinting the King of Prussia's bust being ascribed to Mr. Josiah Holdship:—

"Hancock, my friend, don't grieve tho' Holdship has the
praise;

'Tis yours to execute, 'tis his to wear the bays."

In addition to the portrait of Frederick, there were others engraved of King George II., King George III., Queen Charlotte, the Marquis of Granby, and Pitt, as well as numerous classical

and fancy subjects of which specimens may be seen in most collections.

About the year 1764, when the affairs of the Chelsea works became disorganised, several painters left and offered their services to the Worcester manufactory. They were engaged, and with their



Old Worcester Porcelain.

assistance the finest Worcester work was produced. Mr. Binns states that three of these men were remembered by an old painter who was still employed at Worcester in 1852. He had been on the books for nearly sixty years, and distinctly recollected these artists, who used to tell that they had been trained at Chelsea under a Frenchman who exercised a close vigilance lest they should

disclose any trade secret. Speaking of the work of this period, Mr. Binns says :—

“The accession of the Chelsea painters introduced at Worcester, though only for a short time, the manufacture of mugs of a choice apple-green colour, the same in tone as the coveted apple-green of Sèvres, with a bouquet of flowers tastefully drawn in compartments. None of these has any distinctive Worcester mark. Occasionally, though rarely, pieces are met with having the same apple-green colour, but of Chelsea manufacture. The painter would seem to have been probably a Frenchman employed at Chelsea when the works were declining, and subsequently in the service of the Worcester Porcelain Company. . . .

“There can be no doubt that the motive for much of the ornamental work and the highly decorated services produced at this time came from Chelsea. The rich *bleu-du-roi* ground with salmon-scale markings, the exotic birds with brilliant plumage, the elaborately rich but tasteful gold borders, all bear evidence of a cultivated taste; the designs and combinations were not haphazard, but were made with judgment.

“It is this fact, more than fashion or caprice, which causes old Worcester porcelain to command such high prices in the market. The designs are rich and elegant, and the work is always good.”

Among the famous painters who worked upon Worcester porcelain were Donaldson and O’Neale, who painted some of the finest sets of Worcester vases now in existence.

In 1783 the Worcester works were sold to Mr. Thomas Flight, who had been acting as the London

agent of the company. He placed his two sons, Joseph and John, in charge, and the manufactory was maintained upon the original lines. Mr. Chamberlain, however, who had been in charge of the decorating department, left the old works and opened a decorating establishment of his own.

In 1788 King George III. visited Worcester, and it is stated in Green's history that "About 10 o'clock on Saturday morning, August 9th, their Majesties and the three Princesses, attended by several of the nobility, visited Mr. Flight's china manufactory: as this visit was by appointment, the proprietor had removed some of the branches of the manufactory for the convenience of showing the whole in three rooms. The workmen behaved with the utmost decency, and their Majesties expressed the highest satisfaction.

"The King gave Messrs. Flight the liberty they had requested of styling themselves 'China Manufacturers to their Majesties,' and wished success to the manufactory, giving at the same time some additional orders for their china." The Worcester works thus gained the title of "Royal Porcelain Works," by which they have ever since been known.

Mr. John Flight died in 1791, and two years later Mr. Martin Barr became a partner, thus giving to the firm the well known style of Flight and Barr. A great feature of the work at this time was the production of rich services for important persons. It was fashionable to have elaborate coats-of-arms emblazoned upon the pieces, and as the Worcester painters were well versed in heraldry, much of this work fell into their

hands. Both Messrs. Flight and Messrs. Chamberlain—for the two manufactories were working side by side—participated in this flood-tide of success. Royal services were supplied by each firm, and many of the nobility came forward with their patronage.

Messrs. Chamberlain were honoured by a visit from Lord Nelson in 1802, and one of the old hands who recollected the occasion described him to Mr. Binns as “a very battered looking gentleman.” A large service was ordered on this occasion, but Lord Nelson’s death occurred before the order could be completed.

The two manufactories pursued a steady course for some years, but it was resolved in the year 1840 to effect an amalgamation. The competition between the two was not beneficial, and it was hoped that a more profitable business would result if this were removed. A joint stock company was formed, of which Messrs. Chamberlain and Barr were among the directors, and so the work was carried on. In 1852 Messrs. Kerr and Binns became proprietors, and in 1862 the present Limited Company was formed. Thus a continuous history of nearly a hundred and fifty years appertains to the Worcester Porcelain Works, a record to which no other English porcelain factory can lay claim.

The discovery of china clay and stone in Cornwall about 1755 gave rise to the manufactories of hard-paste porcelain at Plymouth and Bristol. To Cookworthy must be given the credit for the discovery of the native materials. His attention seems to have been drawn to the matter in 1745, for in that year he wrote to a friend: “I had

lately with me the person who discovered the china-earth. 'Twas found in the back of Virginia, where he was in quest of mines." Pursuing his inquiries, he was eventually rewarded by finding in Tregonnin Hill, in the parish of Germo, both stone and clay. Cookworthy took steps for the establishment of a manufactory at Plymouth,



Plymouth Porcelain.

though he did not take out his patent until 1768—in fact some authorities consider that this was the date of the founding of the works. The porcelain was true hard paste, but for some reason the venture was not remunerative. In the year 1770 the whole concern was removed to Bristol, possibly to secure a better market, and was a few years later sold to Richard Champion.

At Bristol several attempts in pottery were made

prior to the removal of the Plymouth works, but the first practical result would appear to have been attained about 1768. The Cornish materials were used, and in fact the venture seems to have been based upon a licence obtained from Cookworthy himself. Eventually Champion became the sole owner of Cookworthy's patent.

Bristol and Plymouth porcelain, being made from the same materials, are very similar in character. Both are extremely hard, but the glaze and finish of the Bristol ware are superior to those of the other. Professor Church has called attention to the small amount of alkali in Bristol ware, being less than four per cent., while both Dresden and Chinese porcelain average more than six per cent. This of course accounts for the hardness of the paste, as a very strong fire would be needed to secure translucency. With the exception of Lowestoft, which is more than doubtful, and an offshoot of Bristol established at Skelton, these two factories represent the sole manufacture of hard-paste porcelain in England. The manufacture ceased in 1781, and since then no serious attempt to produce hard porcelain has been made in this country.

Belonging to the eighteenth century, since which time nothing comes under the category of "old china," were certain other manufactories, now extinct, such as Swansea and Nantgarw, at which places beautiful soft porcelain was made.

William Billingsley, who established the latter works, and indirectly the former also, was an experienced painter employed at Derby. He left that place for Worcester, and then went on to South

Wales. He seems not to have been content to remain a painter, but was desirous of being concerned in the actual manufacture of porcelain. The ware made by him was not, however, a commercial success.

Besides the extinct manufactories, certain others were established towards the end of the century which have flourished ever since. Prominent



Bristol Porcelain.

amongst these may be mentioned Minton's, Spode's, now Copeland's, and Coalport; the two former are at Stoke-on-Trent, the last is in Shropshire on the river Severn. Messrs. Minton have established a great reputation for certain wares in French taste, and in this particular work they are unrivalled. Josiah Spode was at one time credited with the introduction of bone into English porcelain, but Professor Church has shown that bone was used

at Bow, Chelsea, and Worcester at least thirty years before his time.

These manufactories do not yet form part of the history of ceramics. Future generations may allot them their proper place in the story, but at this moment the view that they present has not been mellowed by the atmosphere of time.

PART IV

CHAPTER I

THE MODERN POTTER

IN the foregoing pages the history of the ceramic art has been passed in review, and it will now be well to place before the reader some details of the practical work carried on day by day in the "pot banks" and porcelain works of England. Not that the average reader will care to know much of the intricacies of the potter's art, but there are doubtless some to whom further information will be acceptable.

In considering the matter of ceramic composition one is forcibly reminded of the intelligent foreigner who criticised the mixing of whisky punch as being a series of contradictions. "You put in," said he, "the whisky to make it strong and the water to make it weak, the lemon to make it sour and the sugar to make it sweet; then you say, 'Here's to you,' and you drink it yourself."

To the uninitiated much the same astonishment may be excited on learning what are the different conditions that obtain in the composition of a suitable body either of china or earthenware. In the early days of the potter's story the natural clay, just as it occurred in the earth, was used, without any admixture or preparation. Even the first porcelain was made of pure kaolin, and that the ware was of good quality, if indeed this were the case, was entirely accidental and owing to the fact that the potter had stumbled upon a vein of superior clay. The next step was to dissolve the clay in water, and to allow the coarser particles to settle out, using the fine only. But the moment this was done a difficulty arose. The finer part of the clay was very beautiful in surface and very pure in colour, but it was liable to crack. The coarser particles had their use after all, and so it was found that some grit or sand must be mixed with the fine clay to save loss. Then with porcelain the clay and stone mixed together gave better results than the clay used by itself, and when a higher degree of translucency was needed, and therefore a harder fire had to be used, a support was found in the calcined bone which held up the ware in the severe heat. And so, like the Frenchman's punch, the potter puts together clay to make his mixture plastic and flint to make it short, stone to make it melt and bone to keep it from melting, balancing one material against another to effect his purpose.

The materials in common use by English potters are :—

China clay or kaolin, also called Cornish clay,

and in old times growan clay. Kaolin is the Chinese name for it, and was taken from the name of a hill, "Kao-ling," where a quantity was found. It is a creamy white, slightly plastic substance, which is found in many parts of the world. In England it occurs in Devonshire and Cornwall. The demand upon the mines has been so great that the clay now has to undergo a good deal of washing and preparation where it is quarried. It is worked up with water and allowed to settle, when it is cut up into blocks for sale. China clay forms the main body of porcelain everywhere, and is also used in fine earthenware.

Ball clay, known to potters as blue clay and black clay, is believed to have been washed up and redeposited in the course of ages, and is consequently called a secondary clay. It is not nearly so white as china clay; in fact some samples are quite a dark grey before firing, but their colour becomes much lighter in the fire. Ball clay is very plastic and very strong when dry, many times stronger than china clay, and therefore is much in demand by potters. It is quarried in Dorset and Devon, and requires little or no preparation. All earthenwares depend upon this clay for their plasticity, but it could not be used by itself, because it would warp and crack, and because the fire would be too severe for it.

China stone or Cornish stone is called by the Chinese Petuntse, by mineralogists pegmatite, and in old times was named growan stone, moorstone, or grauen. The Chinese use this to give the translucency to their porcelain, and it has similarly been used in all hard porcelains. This stone,

which is a soft kind of granite, forms the foundation of some glazes, as it is fusible at a high temperature. It is believed that China clay is the result of the decomposition of this granite—the alkalies having been washed out by the rains of centuries, and the pure clay left behind. Cornish stone has long been considered indispensable to the potter, but there are some who believe that its place can be advantageously taken by felspar, which is much more uniform in composition.

Felspar, also called Swedish spar, is largely used by potters as a fluxing material. There are many felspars known to science, but the spar generally used in pottery is the potash felspar named by mineralogists orthoclase. This spar will melt in the hottest porcelain kiln, and exercises a powerful influence upon clays in rendering them translucent; it is also greatly in request in glazes, some hard-paste glazes consisting mainly of orthoclase. The beautiful ware known as Parian is composed chiefly of felspar, with enough clay added for working purposes.

Flint, when calcined and ground, supplies a pure white infusible powder which is of the greatest service to the potter. As already explained, the use of a plastic clay calls for a granular substance in the mixture to prevent warping. If the natural sand be removed from the clay for the sake of purity, a substitute must be found, and this the flint supplies. The flints used are those from the chalk formation, and abundant supplies are picked up on the foreshores of the English Channel. These are calcined in a suitable kiln, and then

ground in water. Flint is not generally used in china, but of all earthenwares it forms a large ingredient. It imparts to the ware strength, solidity, and weight, qualities which are much valued in English services.

Besides this, ground flint plays a very important part in the burning of china. Porcelain requires to be well supported during the firing, or the pieces would twist and lose their shape. For the purpose of this support flint beds are made, which serve to keep the pieces true in form while they undergo the severe ordeal of the fire.

Bone has been the subject of much difference of opinion, both as to the date of its first employment in china and as to the function it exercises. As already related in the historical chapters, it was used in Bow porcelain as early as 1748, and subsequently in almost every English porcelain; but those who write of its use make the curious mistake of speaking of it as a *flux*. Bone ash is infusible in the potter's furnace, and there can be no doubt that its true office is to uphold the porcelain, and to enable it to undergo without damage the severe fire necessary to cause vitrification and consequent translucency.*

Besides these materials, others have been used from time to time to a limited extent, as Wedgwood used barytes and Dr. Wall used steatite, but these were exceptions and have never met with general acceptance.

* To avoid the possibility of a misunderstanding, we may explain that the term *vitrification* means becoming glass-like in character, and *translucency* means letting light through.

In glazes a much greater variety of substances is used, but to point out the effect of each of these would involve too much technicality. Let it suffice to say that such materials as white lead, borax, and lime give the fluxing power, that flint is added to supply the silicic acid, and that clays give to a glaze durability and working properties. Glaze is, in fact, a specially composed glass, which is ground fine in water and spread over the ware, to be fused again in the oven.

The various ingredients having arrived at the manufactory will undergo certain processes in order to fit them for use. Here in the clay shed is the stock of china clay looking so clean and inviting. Large square blocks of it have been landed from the barges, and now they are awaiting the leisure of the slip-maker. Close by are large iron vats, in which are placed a series of iron blades set on a vertical shaft. These blades are arranged at an angle, like a screw-propeller, and when the shaft revolves, which it can be made to do at a great speed, the blocks of clay are thrown in with a quantity of water. It does not take long for the blunger, for so the machine is called, to work up clay and water into a thick cream, so thick that it can only just be poured out of a jug, and it is then ready for use.

Outside in the open air lies the ball clay. It is considered an advantage that this clay should be exposed to the weather. Sun and rain and frost have a beneficial effect upon it, and the longer it is exposed the better it will work. The ball clay is not nearly so clean-looking as the china clay, and when it is blunged up by the incessant beating of

the iron blades it does not suggest cream but rather gruel.

Farther down the yard is a large heap of round grey stones. These raw flints are familiar to some who have frequented the south coast, but they will not remain long as they now are. This other heap is nearly white; they have been through the fire, and hence the change in their appearance. It only now remains for them to be ground. Hard by are two other heaps. This whitish powdery granite is the china stone; the larger blocks will have to be broken with a sledgehammer and crushed small ready for the grinding. The pinkish grey crystalline substance is felspar; it is mostly imported from Sweden, and is sometimes calcined, sometimes used raw.

Now to the mill. Practically all the grinding is done in water. It prevents dust, and is much more convenient for the mixing afterwards. In a large hooped vat there is a paving of hard stone, and in the centre there revolves an upright shaft. From the shaft four large arms push each a heavy block of stone, and this does the grinding. Each of the materials has its own pan. The stone is broken small; the flint and spar are almost small enough, and the bone is quite. Each is ground separately in water, and when quite fine is allowed to flow down to a series of tubs for washing and storage. When large quantities of any one material are used, an underground tank or ark is generally employed to contain the liquid.

Following the body-mixer into the slip-house, it will be seen that he takes a carefully measured pint of each material and weighs it most accurately.

This is very important, as all liquid mixings are made by measure. The mixing tank has upright sides, and, the materials being adjusted to the right weight, so many inches of each are pumped up into the tank ; thus for an earthenware body there might be used fourteen inches of ball clay, eleven of china clay, seven of flint, and four of stone. When this is accurately measured, the whole is stirred up and thoroughly incorporated, either by men with wooden paddles or by a machine.

But the mixture is still liquid, and while this "slip," as it is called, can be used for casting, it is no use to the thrower or the plate-maker. At one time the water was slowly evaporated by heat, but now a quicker method is used. The large clay press in the centre of the building consists of a number of wooden trays with ribbed sides. These are set on edge one behind the other, and are locked together with strong iron bars. Between each tray and its neighbour is a space in which is a stout linen lining, and when the pump is set to work these linings are all filled with slip. Now as the pump does not stop and the linings cannot get any fuller, the water finds its way out through the pores of the linen and the clay is left within. When all the chambers have thus been filled with clay, the pump is stopped, the iron bars unfastened, and the masses of clay removed. A good amount of working is still necessary, and either pug mill or rolling mill or hand-mallets must be brought into play that the clay may attain its workable quality.

All clays are, in modern times, subjected to some such process, except where, in coarse ware such as

drainpipes, it is possible to use the natural clay alone, and where, on the other hand, it is intended to make ornaments only, which are now almost always cast. In the former case the unmixed clay is "blunged" and pugged; in the latter the mixture is used in the slip state and not pressed into clay at all.

Foremost amongst potters is the thrower—he who sits at the wheel and endows the facile clay with life. Long ago he was the only potter, but now, in the multiplicity of moulds and methods, he fills but a secondary place, and in some quarters those who are devoted to mechanical production are dispensing with his services. One has only to watch him at work in order to realise his power. The wheel is a little brass table which spins round between his knees. Upon this he throws a ball of clay—the action giving rise to his title—and presses both his hands upon it. Under the pressure the clay rises like a pillar, to be driven down again and again. This is to secure the uniformity of the mass. Now with his thumb he hollows the centre as the clay revolves, and before the eye can follow the motion he has shaped a bowl. He can do with this spinning clay just what he pleases. He has no mould and no guide but his eye, and the clay assumes shape after shape as he wills. This is just play, however; the thrower is only showing what he can do. When it comes to earning a living and supplying a market, certain shapes must be made as ordered, and unfortunately in this age of utility the very facility and uncertainty of the thrower's work prevent him from becoming a popular producer. Vases are now wanted in pairs



The Thrower.

accurately matched, and for this moulds must be employed. The thrower is relegated to the simple making of cups, basins, and jugs, and even for these he must use moulds to keep the shape true.

Probably this lowering of the ideal of the thrower's work is responsible for his decadence. He has been gradually turned into a machine, and now the tool of steel is doing his work.

For the satisfaction of an exigent market the thrower's work must be finished by the turner. So much is this the case that the term "thrown and turned" is recognised by all manufacturers as if describing a single process. The turner works at an ordinary lathe, and on receiving any piece of work from the thrower he affixes it to his chuck and skims the surface true with an iron tool. It is his duty to form the foot of a teacup or slop-basin, to smooth the outside, and to round the edge, so that it only remains to add handles to the pieces requiring them. When the handler has done his part the ware is ready for the oven.

The wheel is also used for other purposes, but so used it goes by different names. The wheel at which the workman sits is the potter's or thrower's wheel; that at which he stands is called, when revolved by some other power than himself, a "jigger"; that which he turns with his own hand when necessary is a "whirler." On the thrower's wheel are made cups, basins, jugs, and mugs, with sometimes vases and other circular pieces. On the jigger are made plates and saucers of all sizes, and the whirler is used by the dish-maker and the ornamental potter; in the former case because a machine-moved wheel

would not be suitable for oval pieces, in the latter on account of the facility thus given for turning fragile work from side to side.



Plate-making.

The plate-maker's jigger is either revolved by steam-power or by a boy. The latter as a motor is becoming more and more obsolete. On the top of the wheel is placed a mould which will shape the

front of the plate, and the workman, beating out a large pancake of clay, dexterously throws it upon the mould. Now, after pressing the surface of the revolving clay with a moist sponge, he takes a tool called a profile, which shapes the back of the plate and causes the foot to rise. Plate after plate is thus formed and set aside to harden. The moulds being made of plaster are very porous and soon suck the moisture from the clay. When in a leather-hard condition each plate, still on its mould, is put back on the jigger and smoothed, and when quite dry the face is brushed over with a handful of tow to remove any slight marks. Of late years much of this plate and saucer making has been done by machinery. The plate-making machine consists of four parts, two revolving heads and two strong iron arms or bascules. One of these heads with its attendant arm is devoted to making bats or pancakes, to be eventually evolved into plates. The workman takes a ball of clay and places it upon the centre of the head, when the arm descends and spreads out the clay into a circular bat. This the man now lifts and lays it upon his mould, just as if he were about to make the plate by hand, but after a slight pressure he seizes the second arm, to which is affixed a profile, and brings it down upon the mould. The plate is formed as if by magic, and the insatiable machine is ready for another. This sounds very satisfactory to the consumer, inasmuch as quick making means low price. Unfortunately in the case of pottery it often means low quality also, for the simple reason that machines will not work fine clay. A clay of good quality is always less plastic than a cheap

one, and the machine demands a very plastic clay ; hence the tendency of machine work has been to lower by small degrees the quality of the average earthenware body, as well as to rob the art of the potter of all its poetry and romance. The iron arm of the machine has been named a "jolly"—why, nobody seems to know, unless it be that the inventor described it, in language more striking than classic, as "a jolly good thing"—and this "jolly" has been made automatically operative in the displacement of the thrower. Cup moulds are set beneath a series of automatic arms, and, being made to revolve, a ball of clay is thrown into each. The "jolly," furnished with a tool of suitable shape, plunges into the soft ball, and forces the clay up the sides of the mould until it takes the form of a cup. Then the arm rises, the mould is removed, and another put in its place. What would have been said by the ancient Greeks if, in their pride of pottery, they could have foreseen the making of vessels by the hundred by such means as these ?

The dish-maker proceeds in much the same manner as the plate-maker as regards his moulds and his clay, but he is necessarily slower and more deliberate. The bat placed on the mould, his whirler is revolved gently by hand, so that he may have time to adjust the clay to the oval shape of his dish. His hand must accommodate itself to the movement, and the pressure must be equalised all over the surface—by no means an easy matter, and one that requires constant practice. Machines for making dishes have been attempted and are used in France, but not to any extent in this country.

Hollow-ware pressing is the term for making hollow pieces such as soup-tureens and toilet-ware out of clay rather than from slip. At one time casting was almost unknown and everything was pressed from clay. The hollow-ware presser uses a whirler, but not a jigger, and does all his work by hand. His mould is usually in several pieces, for the convenient extrication of the finished work, and these pieces are bound together by a strap or cord. The clay is beaten out into suitable bats, and these are pressed and beaten into the mould until every crevice is properly filled. The suction of the plaster and the warmth of the stove in which the moulds are set speedily harden the clay, when the mould is untied and opened and the work released. The process is sometimes more elaborate than is indicated by this brief description, but it is becoming more and more the fashion to cast the more intricate pieces.

Before describing the process of casting, it will be well to say a word about the modeller, who is responsible for the original creation of the shapes which are afterwards moulded.

Upon the order being issued for a new vase, bowl, or plate, the modeller has first to produce a design on paper. This comprises not only the plain form, but all details of embossment, handles, spout, feet, or whatever other accessory there may be. This being approved, it must be reproduced in clay. Modelling clay is compounded, not for its firing qualities, for it never reaches the oven, but that it may work well in the fingers. First the plain block or shape is formed. If circular it can be turned on the lathe, if otherwise it must be

constructed by hand ; and then each piece of the ornament or accessory is carefully worked out in clay and applied, until the whole model presents the similitude of the original drawing. Next comes the cutting up, for it would be manifestly impossible to make a mould of the whole work at once. With a long thin blade the modeller cuts his work into such sections as will deliver readily from the moulds, and these are handed to the mould-maker, who proceeds to make an accurate reverse of each by pouring around it liquid plaster. These moulds are so arranged, each in several parts, that the work when cast can be readily removed ; and when all have been finished the clay model is pulled out and thrown away, and the moulds are ready for the potter.

The first care of the workman on receiving the moulds is to dry them thoroughly, and then, arranging them before him, he fills each very carefully with the prepared slip. Asserting its power of suction, the plaster causes a coating of clay to adhere to its inner surface, and when this is deemed sufficiently thick the remaining slip is returned to the jug. By this means every piece is cast hollow, to the great saving of material and the less loss in firing. Every mould is now opened, and the duly formed work taken out ; but there is still much to do. In an elaborate model twenty or thirty moulds may have been necessary, and each of these delivers its own part, which must be relegated to its proper place. The maker arranges all these parts before him, and proceeds to fit them accurately together. He joins them with a little thickened slip, and so the whole work is gradually

reproduced. The original model could not be fired, but the replica is intended for the kiln, and having passed through the fiery ordeal will be no longer clay but porcelain.

It is not, of course, every model that is so elaborate as to need several moulds. Dishes, plates, and saucers are made off single moulds, cups and basins out of single moulds also, but the mould forms the face of the plate and the outside of the cup. The process of casting is not employed for making flat pieces, but is coming more and more into use for cups, especially where a pattern is embossed in the clay. To facilitate rapid production a casting machine has been devised whereby a number of moulds are filled at one operation from a tank of slip. This somewhat lessens the cost, but does not contribute towards excellence of work.

CHAPTER II

POTTERY KILNS

A GREAT part of the charm, and nearly all the risk, of the potter's work is found in the ovens. The tender clay must be consigned to a fierce heat, and no friendly hand can be near to sustain it. Without the fire no quality could be attained; the clay would never lose its original nature, but would remain of the earth earthy. What wonder then that the potter regards his kilns as the most important department of his work, and watches with jealous care over the results of his firing.

Pottery kilns are divided into three classes, according to the work they have to do. These are biscuit, glost, and enamel kilns. In different factories these classes are again subdivided, but practically the broad divisions remain.

The biscuit oven is that in which the ware is changed from clay to "biscuit"; different heats are needed for different mixtures of body, but the work of the oven is the same. English biscuit ovens are believed to reach a temperature of 2,500 degrees Fahrenheit, but this is the extreme. The majority of kilns do not attain nearly so high a point. Glost ovens are used for the firing of glaze, which is applied after the ware has passed through the biscuit oven. The temperature of these ovens would not exceed 1,900 degrees Fahrenheit. Enamel kilns are those in which colours and gold are burned. They are differently constructed from the others, and do not go beyond a clear red heat, about 1,400 degrees Fahrenheit.

The usual form of the biscuit oven is a compromise between a beehive and a champagne bottle, but this is only the outward and visible sign. The oven proper is inside, and consists of a cylindrical chamber about eighteen feet in diameter. The walls are of hardest fire-brick, built fully two feet thick, and are pierced at regular intervals by the fireplaces or mouths. These, of course, open into the interior of the oven, where the flames and fuel gases are conducted upwards by an enclosing wall called the "bag." The top of the cylinder is domed over, and certain outlets are provided for the smoke. Over all this rises the hovel which is seen from

outside. Originally this hovel was only a wall of broken saggars piled up round the kiln to keep in the heat, but being gradually extended in height, the top was drawn together into a wide chimney flue and the present form was evolved. Between the hovel and the kiln is a space in which the fireman works, and which serves to protect both kiln and workman from the inclemency of the weather. Beneath the floor of each kiln a number of flues are built. These communicate with an opening in the centre, and over this, when the kiln is being filled, a column of rings is erected to form a supplementary chimney. Thus the flames travel up the sides of the oven and beneath the floor, filling the whole chamber with fire.

The art of putting the ware ready for burning is called "placing," and upon the skill of the placer much of the success of the oven depends. For china firing fine ground flint is used in which to bed the pieces, but for earthenware silver-sand will answer, as the fire is not so severe. For plates and dishes the placer must prepare a bed with a tool which gives the reverse form of the piece to be burned. For the protection of the ware there are used the strong boxes made of fire-clay called "saggars," or else shallow pans of the same material, which are called "setters." The saggars will contain many pieces each, the setters only one, the latter being used for flat ware when a special bed is needed for each plate. Filling a setter with powdered flint, the placer impresses his bedder upon it, much as a seal is used upon soft wax. The flint having been previously made slightly

damp becomes solidified under the pressure, and on lifting the bedder a clean mound of flint, of the proper shape, is left. A plate or saucer, as the case may be, is now inverted upon the bed, and the whole is covered by a second setter, which is made hollow beneath, so that all may fit together in one column. The saggars are filled in a similar manner with pieces for which no special bed is necessary. Some shapes will stand alone, others need to be supported by a careful packing of flint; for specially elaborate works a series of props is contrived. These are made of the same clay as the piece itself, that an equal contraction may be secured. For cups and other circular pieces rings are contrived which fit like tapering plugs into the mouths of the articles, and by their pressure keep the shape true in the fire. These rings are turned on the lathe, and must, like the props, be of the same clay as the ware for which they are used. Considerable art is necessary in turning a cup-ring, for were the angle too steep, the ring would tend to fall inside the cup, and would cause an ugly flange on the edge; on the other hand, were the ring too flat, it would not exert sufficient pull upon the edge of the cup, and the result would be crooked ware. Besides this, almost every shape of cup needs its own special ring, so that there is practically no limit to the possibilities of loss.

The placer having finished his work, and the oven being piled as full as it will hold with columns of saggars and setters, the narrow doorway is walled up and plastered over, and all is ready for the fire. Some time before a carefully built

pile of coals has been ignited in the yard, and now the whole oven staff turn out armed with long shovels. They pull down the blazing heap, and each filling his shovel with the red-hot coals, they file back to their kiln. The fire is placed in each "mouth" all round the oven, and little by little coal is added. The heat must be raised very slowly, for there is a great amount of substance to be permeated, and sudden heating would destroy the clay ware. The clay has certain definite changes to pass through under the influence of the fire. First the remaining traces of moisture must be driven off, and then the heat attacks the combined water in the clay, expelling that also. It is this combined water, or water of combination, which constitutes the difference between clay and pottery. Sun-dried clay, however hard, can always be softened by the addition of water; but once a red heat has been reached, it is no longer possible to soften the clay which has been so heated. The reason is that the combined water has been expelled by the fire, and it can never be brought back. During the expulsion of this water, which is the first change taking place after a red heat has been reached, the clay assumes a soft and yielding condition, and is very liable to distortion. This is increasingly the case with a plastic clay, for such a clay contains more combined water than one which is "short," and, naturally, the more water there is to be expelled the greater the disturbance during the operation. This fact illustrates the assertion made in the last chapter, that flint, or some other kind of grit, must be added to a clay to ensure its good behaviour in the fire. Substances like

flint contain no combined water, and therefore undergo no change in the fire.

When the water of combination is all expelled, the ware undergoes a diminution in size in direct proportion to the amount driven away, and then as the heat rises the fusible particles begin to melt. In some bodies the amount of fusible material is so small that its effect is entirely absorbed by the porous ingredients with which it is accompanied, much as a small piece of butter has little or no effect upon a large quantity of flour ; but with an increase of the flux there comes a greater flexibility in the fire and a more glass-like or vitreous nature afterwards.

It is to counteract this flexibility that such substances as flint and bone are used. Were it not for the influence exerted by these a porcelain or stoneware body would in all probability collapse and fuse. It would be impossible to produce a definite shape at a high temperature, and nothing beyond coarse pottery would be attainable. In this connection it must be remembered that kaolin is, perhaps, the most infusible substance in nature, and the makers of hard porcelain are able, by using an excess of this clay, to dispense with both flint and bone.

When the fluxes have, by the intense heat, been set to their work of cementing the particles of clay together, the judgment of the fireman comes into operation to see that the fire is not carried too far. Even if the ware could not be melted, it could be twisted and damaged by too great a heat, and this must not be allowed. Ranged round inside the kiln, in open saggars and accessible to the proof-

holes, are certain test pieces. These can be drawn out by the man in charge, and by them he judges whether the heat has been sufficient. These tests are of different sorts. Sometimes a piece of clay of definite length is used, the temperature being gauged by the amount of contraction undergone. Sometimes small cups, made of the actual ware being fired, are employed as tests. These show, when properly fired, the right amount of translucency and the required colour. Again, a certain glaze mixture is spread on pottery rings, and when this melts the fireman knows that the heat is right. Each manufacturer has his own test, and generally adheres to that one which experience has shown to be satisfactory. Many automatic guides have been devised, but there is a natural prejudice, on the part of those who have large interests at stake, to forsake the teaching of practice, and the human judgment, fallible though it be, is still the most general means of governing the firing of potters' kilns.

In Germany a clever device has been adopted in certain cones or pyramids made of partially fusible substances. When the heat reaches a certain degree, the cone, set in the oven, bends over until its point reaches the level of its base, and as the mixture of which these cones are made can be regulated so as to melt at any required temperature, an accurate test is afforded. These simple pyrometers have not yet been used, to any extent, in England, but it will probably not be long before the Staffordshire potters take advantage of them.

When the oven has, in the judgment of the fireman, reached the proper degree of heat, it is the

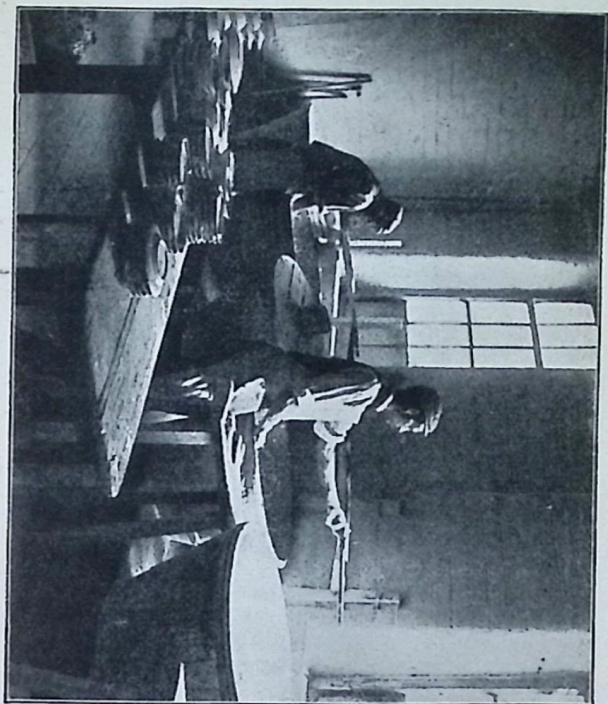
practice in some factories to maintain that temperature for some hours, in order that the centre of the kiln and the whole body of the ware may be more equally soaked in the flame. Many different opinions prevail upon this point, but it is not necessary that these should be discussed here. In any case, when the superintendent is satisfied, the fires are allowed to die out, and the kiln begins to cool. This naturally takes some time, from thirty to sixty hours, and then the bricks are pulled down from the doorway and the contents of the oven drawn out. Not until now can the result of the labour be seen. The first few pieces are sufficient to indicate the probable appearance of the whole, for a bad firing is at once apparent. The ware may be dull and leaden in colour, or perhaps warped and blistered, to the loss of the manufacturer and the vexation of the fireman; but in the majority of cases a fair amount of success is attained, and the large proportion of the ware is good enough for sale either as "best" or "seconds."

The whole contents of the oven are carried into an adjacent room, where the women scourers labour with sandstones and glass-paper to remove all the adherent flint. The surface of each piece is made as smooth as possible, and then the warehouseman takes it in hand for classification. The judgment to be exercised by this functionary is unlimited. He has to consider not merely whether a certain plate or cup is perfect, but whether its imperfections can be concealed. For example, he may have choice of two patterns for which to select services. One is to be a plain

border of colour, with the larger part of the piece left white ; the other may be a pattern which will cover almost the whole surface. For the former he will lay aside the cleanest ware ; with the latter a few black specks will not interfere, as they will be hidden by the decoration. It will thus be seen that the economical use of stock depends entirely upon the warehouseman ; but so far only biscuit ware has been mentioned. The defects apparent at this stage are for the most part prominent ones, such as cracks and blisters caused by the fire, or faulty shape and finish, the result of bad workmanship. Perhaps it may be pointed out in passing that these faults of the potter can rarely be detected before firing. It needs the ordeal of the oven to effect their development, and no matter how carefully an error may be concealed in the clay, the fire will infallibly reveal it. Very bad pieces are broken down, and great judgment is needed as to what must be destroyed and what can be saved. It is after the glazing that the minute defects appear which separate the stock into seconds, thirds, and even lower grades.

The glost or glazing kiln is much the same in construction as the biscuit oven, but usually a little smaller. The firing, too, is conducted upon the same principles, except that no "soaking" is necessary. A sharp, clear fire is the best for glazed ware. Here, however, the similitude ceases. The handling and placing of the ware are totally different. When the scoured biscuit ware is ready for glazing, it passes into the hands of the dipper, who, standing before his tub of glaze, plunges each piece beneath the surface.

The materials used in glazing have already been alluded to, but a word here with regard to their



preparation will be useful. The soluble salts, such as soda, potash, and borax, are melted together with some of the clay and flint to form

what is called a "*frit*" or hard glass. This frit is ground in water with the rest of the materials, white lead, Cornish stone, and the like, until the whole is a smooth thin batter. This is the glaze which the dipper has before him, and which, as each piece is dipped into it, spreads itself as a thin coating over the whole surface. Taken into a hot room, the ware speedily becomes dry again, and is taken by women called "trimmers," who look it over and remove the glaze from such parts as the feet of plates and cups, so that they may not adhere to the saggars in firing. The glaze has to be melted in the oven, and would run like treacle if it were too thick, binding the pieces down to their supports, so that they could not be separated without damage. This glutinous property of the melting glaze governs the whole detail of glost-oven placing. Angles, tripods, and spurs are provided, that every piece may be kept from contact with its neighbours. The saggars are carefully brushed over with an infusible mixture, so that nothing may cling to them. In short, every bit of ware in the glazing fire must depend upon itself alone, for any support afforded would result in a fatal embrace between helper and helped.

The contents of the glost oven are, on cooling, removed to the warehouse, to undergo a final sorting and storage as white ware. The processes of decoration follow, but while dealing with the ovens it will be best to include the enamel kilns.

The form of kiln most frequently used for burning colours is a muffle or box five or six feet in height. This is built either of iron or slabs

of fire-clay, and is heated by a number of fires placed underneath it. The flues through which the flames pass are conducted up one side of the kiln, over the top, and down the other side, or else



An Enamel Kiln.

are arranged to pass up both sides and out at the top. The effect of either method is to completely encircle the kiln with flame, and to raise the interior to a bright red heat. Decorated ware

must be very carefully handled, because of the danger of rubbing the unfixed work, but enamel-kiln placers are usually men of deft skill, and they manage to fill their ovens with pieces so covered with work that to touch them without marking would seem an impossibility.

The ware is ranged on iron racks, as the heat is not too great for the metal, and no sagger are needed—in fact the muffle itself forms a large sagger and effectually shields the pottery from the flames. The fire is kept up for some eight or ten hours, very slowly at first, but finishing up rapidly, and then every fire-mouth is emptied to secure speedy cooling. At this stage all the goods are wanted quickly for orders, and it is important to lose no time in the firing. To facilitate the operation a new kiln has been devised, by which the fire is kept continuously burning, and the ware is made to travel through it upon carriages on the principle adopted in the baking of biscuits and the annealing of glass. It is said that a great saving is thus effected both in time and fuel.

Enamel-kiln tests consist of broken fragments of ware, on each of which is placed a smudge of rose-colour. This colour, which is prepared from gold, has the property of altering its tint with every advance in temperature, changing from a brick-red to a pink and eventually to a dull purple, so that by drawing out one of these fragments with a long pair of tongs and inspecting it when cold the fireman can see to what point his kiln has progressed. Enamel-kiln firing needs great care, for the margin between right and wrong is very much smaller than is the case with either biscuit

or glost ovens. Besides this, the ware in the kiln is more valuable, being decorated with more or less elaboration. On the other hand, the risk is not so great, because the fire is much more gentle and more completely under control.

In every case it will be evident that upon the fireman rests a large amount of responsibility. He needs courage and nerve to carry his fires on to the fullest degree, and calm judgment that he may know when to stop.

CHAPTER III

TRANSFER PRINTING

MR. MAYER, in his "History of the Art of Pottery in Liverpool," states that in "The Liverpool Guide," published in 1799, it is said that "Copper-plate printing on china and earthenware originated here in 1752, and remained for some time a secret with the inventors, Messrs. Sadler and Green. It appeared unaccountable how uneven surfaces could receive impressions from copperplates. It could not, however, long remain undiscovered that the impression from the plate is first taken upon paper and from thence communicated to the ware after it is glazed. The manner in which this continues to be done here remains still unrivalled in perfection."

Mr. Mayer's own account is that "Mr. Sadler gained his first idea of applying the art of printing to the ornamentation of pottery, from seeing some children stick waste prints which he had given

them upon broken pieces of earthenware that they had brought from the potteries to ornament their baby houses with. This Mr. Sadler kept to himself, and seeing the value of the art thus suggested to him by that circumstance, after many fruitless trials he at last succeeded in accomplishing his object. When he saw that his invention was nearly perfect he communicated it to Mr. Guy Green, who had lately succeeded Mr. Sadler's father in the printing business.

"The two now conducted their experiments together, and ultimately entering into a partnership determined to apply to the King for a patent. They accordingly procured all the requisite certificates and other papers necessary to show their claim to the discovery, but they consulted with their friends however, who, feeling that so curious a discovery would not easily be found out, and consequently that a long time must elapse before others could injure them by opposition, and considering besides the great expense and delay attendant upon securing the patent as well as the exposure of the method, the secret of which was of the utmost value to them, it was thought better to abandon the idea of a patent. The papers consequently were never used, which will account for their being now in my possession, I having obtained them from Miss Sadler of Aintree, the only and still surviving daughter of the discoverer. Several places have been selected as claiming the honour of the first introduction of the art which helped to make English pottery famous throughout the civilised world, and has done so much towards making its production one of the greatest staple

manufactures of the country. There are computed to be now (1855) nearly 110,000 hands employed in connection with the art, and therefore to set at rest the question of any doubt about it in future I give the evidences from the original documents now in my possession." Mr. Mayer then gives in full the well known affidavit sworn by John Sadler and Guy Green on August 2nd, 1756, in which they declared that they had printed twelve hundred tiles in six hours, and that they had been upwards of seven years in finding out the process.

What Mr. Mayer was anxious to claim for Liverpool Mr. Binns endeavoured to allot to Worcester, and the consequence is that it has been proved that transfer printing was used upon the enamels of Battersea earlier than at either of these places.

M. Roquet, who wrote at the end of 1754 or the beginning of 1755, after alluding to Chelsea porcelain, said:—

"Not far from hence they have lately erected another manufacture, where they paint some of their work in brooches by a kind of stamp. Having formerly imagined some such method of painting porcelain, I made several essays of it, and yet I do not pretend that what I am going to say concerning it is exactly the practice of this manufacture. The subject you want to stamp or imprint must first be engraved on a copperplate; the cut of the engraving must be so open as to contain a sufficient quantity of a substance appropriated to the operation. The plate is covered with this substance, which should be the calx or lime of

some metals, mixed with a small quantity of proper glass. The impression is made on paper, the printed side of which is afterwards applied to the part of the porcelain intended to be painted."

Mr. Binns also gives an account of three dated pieces of Battersea enamel. There is a letter extant from Horace Walpole to Bentley, dated September 18th, 1755, in which he says: "I shall send you, too, a trifling snuff-box, only as a sample of the new manufacture of Battersea which is done from copperplates." Then there is in the possession of Mr. Octavius Morgan a snuff-box dated, in Masonic chronology, 1754; and lastly, Mr. Binns has in his own collection the cover of another box, upon which is the date 1753.

The Battersea manufacture was carried on by Mr. Alderman Jansen, who became bankrupt in January 1756. In the following June the establishment was broken up, and the engravers and printers dispersed; so that if the Worcester works took the matter up at once, they preceded the date of the Liverpool affidavit by two months only. There is in the Museum of Practical Geology a printed mug of Worcester manufacture, dated 1757. The workmanship is so good as to preclude any idea of its being a very early experiment, and there is no doubt whatever that Robert Hancock, who had been an engraver at Battersea under Ravenet, brought the knowledge of his art to Worcester. It therefore seems to be evident that Liverpool and Worcester were practically contemporaries in the development of printing, taking the Liverpool date from the affidavit; but there is still the statement in that declaration that the

inventors had been working at it for seven years.

An assertion like that must be received with caution, for an inventor is apt to mistake the glimmer of light which heralds the dawn for the full blaze of a noonday sun. The idea may possibly have occurred to Sadler in 1749, but Battersea was turning out perfect work in 1753, and Worcester in 1757. It must be admitted upon the above evidence, which has mainly been marshalled by the exertions and research of Mr. R. W. Binns, that Battersea was the first in the field, but that there is little to choose between Worcester and Liverpool as regards time. When, however, the question of quality is raised, there can be no difference of opinion. Both in engraving and transferring, in design and detail, Worcester is far in advance. Shaw speaks of the Liverpool engraver, one Carver, as "a man of mediocre talent," and such indeed his work shows him to have been.

Hancock, on the other hand, was an engraver of the highest repute. His work is of the very best quality, and the transferring is equally skilful. From the affidavit already spoken of, it would seem that Sadler and Green, being utilitarians and men of commercial bent, thought most of the speed of their process, and accounted it worthy of note that they could print so many tiles in an hour. Dr. Wall and Robert Hancock, on the other hand, were artists, and considered mainly the fine quality of their work. This may suffice to show why the two productions, though completed at the same time and by the same

process, are so radically different from each other.

Printing on pottery was at first used as a complete decoration and to display the nature of the engraving. Portraits, views, and fancy scenes were produced in different self-colours, and the pieces needed nothing else. Gradually, however, a change was developed. The simple colours did not look rich enough beside the gorgeous painting and gilding of the Georgian era, and the printed views must needs be coloured.

Naturally this treatment detracted from the fine appearance of the engraving, and the previous high finish became unnecessary. It could not be long before the engravers themselves deteriorated, until at length printing, which at first held a high place among decorative processes, was relegated to the production of simple borders and the outlines of flowers, for the convenience and guidance of cheap painters.

The process of transfer printing is extremely interesting on account of the many details to which careful attention has to be given. The copper-plate, the paper, the press, the oil, the colour, and the ware must all be in proper condition if fine work is to be done, and it may not be out of place to give here some particulars of the work as now carried on.

Upon a pattern for printing being designed, the drawing is passed to the engraver, who prepares for it a suitable piece of copper. This copper is in the form of rolled plates about one-eighth of an inch in thickness. The preparation of the copper is important, for were the surface not

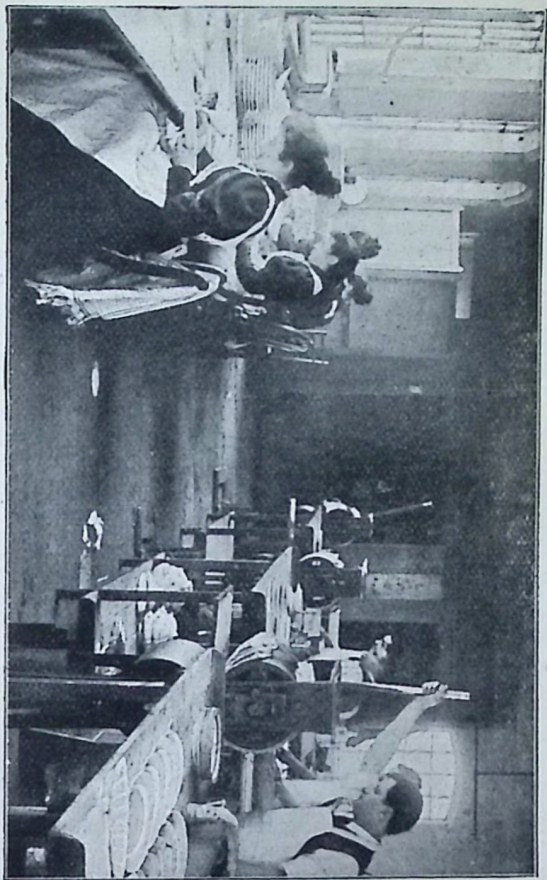
uniformly hard it would wear unequally and speedily become useless. At one time the engraver had to trace every line of the designer's work, and transfer it laboriously to the copper, squaring and measuring if any alteration in size had to be made. It must be remembered that a drawing on paper is not usually prepared with sufficient accuracy to fit closely to every part of the pottery, but the work of the engraver is useless if not exact. To fit a plate is easy, but when such a piece as a milk-jug with undulating edge has to be printed, the matter is more complicated. The engraver lays morsels of wax all over the part to be printed, and then presses upon these a piece of tissue-paper. Carefully removing all wrinkles and marking or cutting out all the gores, the paper is removed, and being laid out flat upon the copper-plate shows the required form. To this outline the design must be adjusted, and it is here that the difference between good and bad work is seen. How often, in a cheap piece of printing, is the work evidently a make-shift! No special engraving has been made for the difficult pieces, but a straight length of print has been cut and bent out of all recognition in order to fit.

Much of the labour of tracing and enlarging or reducing has now been removed by the application of photography. A negative of the drawing is taken by the wet-plate process, and the collodion film can be detached bodily and floated to its place on the copper, thus enabling the engraver to cut right into the pattern with his tool without any preliminary labour or loss of time. The cutting of a copper for transfer printing is con-

siderably deeper than for bookwork. The whole of the colour cannot be pressed out on the paper, and as a large body of colour is required for transferring, allowance has to be made in the depth of the engraving. And this is more the case for some colours than for others. A copper engraved for printing under the glaze must be a good deal deeper than one which is only used for enamel colours, because the stronger fire of the glaze kiln through which the first has to pass impoverishes the colours to a greater degree than does the other, so that an engraver always wants to know for what colour his copperplate is to be used before he can cut the pattern correctly.

Now to the printing room. In the centre of the room are the printers, each in a kind of cubicle. The man is not enclosed, however, except by his benches and stove and press. The press stands in front of him, and is like a large iron mangle. The rollers are iron, and so is the heavy plank which passes between them. By means of a long handle he works the upper roller round through half a circle, and this of necessity moves both the plank and the lower roller. At his left is the stove, reduced by engineering skill to a simple iron slab, hollow, through which waste steam passes, keeping it at an even temperature, just too hot to press the hand on. Beside the stove is a strong table, to which is affixed a sheet of copper upon which to clean his "boss," and upon the remaining side of the square is a sloping desk for damping the paper.

This is how he sets to work. Taking the engraved copperplate, he places it upon the stove



A Printing Room.

to get warm, and with his palette knife he takes a portion of the mixed colour and spreads it upon the copper. This colour has been mixed in a very stiff oil, so stiff that were it not for the heat of the stove it could not be worked at all. The object of this will be seen in the transferring. After carefully working the colour into all the details of the engraving, the printer scrapes the surplus away with his knife, and taking a pad or "boss" covered with corduroy he wipes the surface of the plate perfectly clean. This boss he slaps now and then upon the sheet of copper which is fastened to his bench, and so keeps it from becoming overcharged with colour. The plate, being duly filled and cleaned, is laid upon the plank of the press, and the printer, taking a sheet of fine tissue-paper, makes it thoroughly wet with a solution of soap and water and lays it down upon the copper. This requires great care, for the smallest crease in the paper would be detrimental. Now he lays a piece of printers' blanket on the paper-covered copper, and working the handle of the press, he passes the whole between the powerful rollers. Great pressure is thus exercised, and the saturated paper is forced into close contact with the colour in the engraving. The pressure removed, the copperplate is placed on the stove once more. As the copper grows warm the paper is carefully lifted by one corner, and as it peels off it carries with it an impression of the engraved pattern. So far the operation of printing, but now the transferer must be brought into notice.

Seated down the sides of the room at well lighted tables are a number of women and girls,

two or three to each printer. The youngest of the party is called the "cutter"; she fetches the print from the press, and with a large pair of scissors in her deft fingers she cuts away all superfluous paper, leaving the pattern on a long narrow strip. Meanwhile the senior woman, the transferrer, has coated the ware over with a fine varnish to ensure the adhesion of the print. Now she proceeds to lay the printed paper accurately in its place, adjusting it with a needle if necessary, and when all is in position the paper is pressed down with a piece of flannel. Stronger measures are, however, necessary to secure perfect contact, and with a tightly bound roll of cloth lubricated with soap one of the women rubs the whole print firmly and evenly. All being ready, the printed piece is immersed in a tub of water, when the paper floats away and the print is left upon the ware. Now the object of the stiff mixture of colour is seen. Were the colour soft enough to be used cold, it would not resist the action of the water; but, being heated, the cold surface of the pottery causes it to at once harden, and the water leaves it unharmed.

For both biscuit and glost printing the process is the same, with but slight variation in the oil and varnish. Sometimes the ware is printed dry and a slight dusting of powdered colour is passed over the print, but these are minor deviations which do not affect the principles under which the work is carried out.

A delicate use of this method of dusting was found in what has been termed "bat printing." This was carried on some years ago at Worcester, and received its name from the fact that a flexible

"bat" of glue was used instead of paper. The idea was that some engravings were so fine that no adequate effect could be got by printing in colour. The printer therefore took the oil alone, and filling the minute work with this, he used the ball of his thumb as a "boss." Cleaning the copperplate thus, he took the piece of elastic glue and squeezed it down upon the copper. No other force was needed, and of course no press could be used. The glue took up the oil from the engraving, and being then laid gently upon the china, the pattern in oil was transferred. This of course could hardly be seen, but some colour, generally black or purple, being reduced to a fine flour was softly dusted over the place with a piece of cotton wool. The oil attracted the powder, and the pattern stood revealed. It was then only necessary to fire the ware in the usual way to fix the print. This process was not a commercial success, and has never been worked upon a large scale.

Of late years a great development has taken place in the art of lithography upon pottery. The idea originated in France, which country had for some time a monopoly of the work, but eventually the prints became obtainable in England, and then the English potters began to develop the work themselves.

The obvious difficulty in lithography is the small quantity of colour carried by the stone. Copper can be engraved deeply, but this is only slightly possible with stones. The problem has been solved to some extent by the use of dust as an addition to the print, but the lithographic

colours are still much weaker than those obtained from copper. The process is capable of producing very light and graceful effects, and is therefore likely to become even more popular. At present the details upon which success entirely depends are guarded somewhat jealously by manufacturers.

CHAPTER IV

PROCESSES OF DECORATION

THE evolution of pottery decoration is a subject which may well excite the interest and encourage the research of thoughtful men, for it is the history of the growth of the artistic instinct in the mind of the human race. Very early in the potter's career the idea of decoration seems to have occurred to him : first a scratch with a pointed stick upon the soft clay, then crossed or herring-bone or basket-pattern lines ; advancing by degrees to perforations and mouldings, but so far treating the clay only. The beginning of colour decoration, or, rather, light and shade, was the black-figured work introduced by the Greeks and the white slip-painting practised by the Romans. In those days of darkness the chemist had not come to the assistance of the artist, and ceramic colours were confined to natural clays and metallic ores. An exception to this must, however, be made in favour of certain coloured glazes used by the Egyptians and others, which were compounded with some skill.

Employing the substances prepared in the labora-

tory of nature, the primitive decorator developed the idea of slip-painting, clay upon clay, until eventually the provision of certain artificial tints enabled him to treat his improved wares in the style adopted by the Rhodians. As clays were purified and made whiter by preparation, the decoration became colour on white instead of white on colour, and the properties of an improving glaze rendered possible an excellent quality of earthenware.

It was, however, from the Far East that the inspirations came which have given rise to modern decorative methods. Painting on porcelain naturally had its birth where porcelain itself was born, and in later times most white earthenware has been decorated in an imitative manner. It is not generally recognised that earthenware as a material has values and limitations peculiar to itself. Slip-painted wares and Damascus dishes belong each to their own school. They are not imitations. But so much cannot be said for the *fin-de-siècle* dinner set in cheap earthenware. It partakes of no style nor follows the traditions of any school, but it has the important merit of cheapness—not always to be separated from nastiness.

With the importation of porcelain came the suggestion of its decoration, and upon the Continent of Europe the leading painters thought it not beneath them to use their pencils upon the pure surface of the glaze. Thus painting became the most important method of china decoration, and even now in the tongue of the unlearned fine work is lauded as "hand-painted." Mechanical and artificial methods have to a great extent dethroned

the porcelain painter, but he still maintains his grasp of the finest work.

The methods of decorating in use at the present time are painting, gilding, printing, filling in, banding, and groundlaying, besides burnishing and chasing the already fired gold. Printing, both copperplate and lithographic, has been dealt with in another chapter, but it will be of interest to examine the conditions under which the other arts are carried on.

In the first place it is important that the nature of ceramic colours should be understood. In ordinary conversation they are described as "mineral colours," but this, while being the truth, is very far from being the whole truth. Lapis-lazuli is a most beautiful mineral colour, but the blue entirely disappears in the oven. The colours are, in fact, a series of glassy mixtures, to which the required tint has been imparted by certain metallic salts. It is well known to the experimental chemist that a melted bead of borax can be tinted by certain oxides. This is the principle underlying the manufacture of colours for ceramic decoration.

It is not necessary here to enter upon the technicalities of colour-making, but one or two broad statements will serve to throw light upon the matter. Besides coloured bodies and coloured glazes, two descriptions of pottery colours are needed: glaze-kiln colours and enamel-kiln colours. The two classes are, with limitations, the same, except that in the former the glaze itself supplies the flux or glass, but in the latter this must be specially compounded and added to

the colouring matter. In other words, a glaze-kiln colour consists of a coloured base only, an enamel-kiln colour is composed of the same base with the addition of a fusible glass. The metals mainly used, with the colours obtained from them, are as follows :—

Iron oxide	...	...	Red.
„ chromate	...	...	Brown.
Chromium	...	...	Green.
Copper	...	...	Green and turquoise.
Cobalt	...	...	Blue.
Manganese	...	...	Brown.
Tin	...	...	White.
Antimony	...	...	Yellow.
Gold	...	...	Rose and purple.

Besides these, there are certain earths and neutral diluents which are known to the pottery chemist. Black can be made by a combination of blue and brown, and various shades of green by adding blue or yellow as the case may be. Gold is used in the form of “purple of Cassius” and antimony as “Naples yellow.”*

Each of these colourants undergoes a special method of preparation. Certain of them, such as copper and gold, will not stand the glaze-oven fire, and therefore cannot be used for under-glaze work. Others, such as iron and purple of Cassius, must not, in their preparation, be melted with the flux, lest the tint should be destroyed ; but the

* For technical details the reader is referred to a work on “Ceramic Technology,” edited by the author. London : Scott, Greenwood & Co., 19, Ludgate Hill.

majority can be fused with the glassy ingredients, and be thus incorporated by fire into a solid mass. This is broken down and finely ground, when the colour is ready for the painter. The oil mainly used by pottery painters is the fat oil of turpentine which creeps over the edge of a cup containing the spirit. Some artists have fancies of their own, using aniseed, spike, copaiba, and similar essences, but turpentine remains the stand-by for all general work.

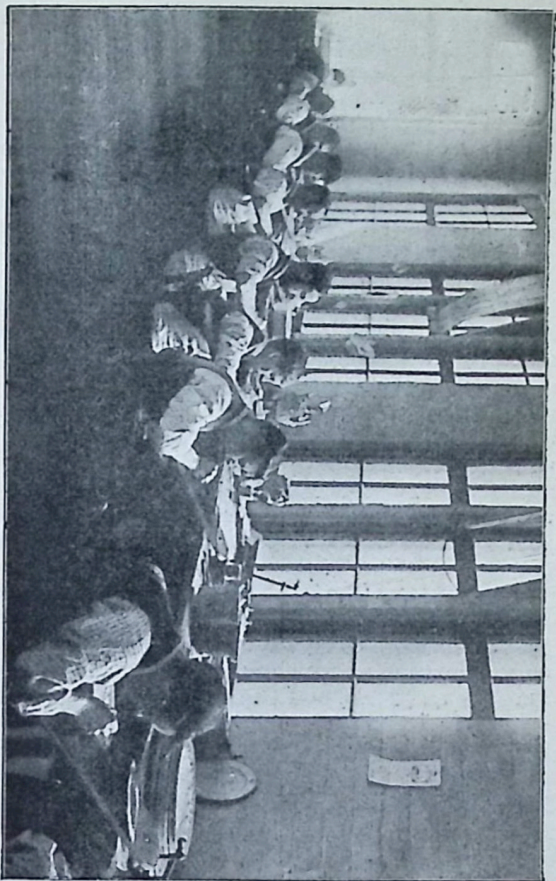
The flower painter, if he be a commercial man, turning off quantities of pieces at a low price, uses no copy. He has painted these flowers so often that their forms are imprinted on his memory and flow like magic from his brush. His roses are a little like vegetables, it is true, and his ferns and heather are somewhat stereotyped; but he is working to a price, and it will not do to be too critical. A long sloping board projects from his table, and upon this he rests his right forearm, holding in his left hand the plate to be painted. Rapidly sketching in a few central lines with Indian ink, he puts on with a broad wash the leading flower. A leaf or two are added in the same vigorous manner, and the plate is laid aside. One after another each piece is taken, and it seems as though his store of flowers were inexhaustible. Never does he repeat himself, and he is always ready with an idea. These men form a school of their own, and each one trains his apprentices upon precisely his own lines. One may, as it is said William Billingsley did, lay a mass of colour and sweep out his lighter petals with a half-charged brush; another may adopt

the neater but less effective method of putting his touches where he wants them to remain: but each has an end in view—to paint an acceptable group and to do it in the least possible time.

There is perhaps an advantage, from the purchaser's point of view, in this pressure of time. It leads to bold and rapid work, but not to accuracy; and indeed, in these days when "selling price" is king, there is little encouragement for deliberate care.

There is, however, a higher school of painters than this, composed of men who would not undertake cheap work at all, and who delight in producing beautiful things. Their painting is expensive, and why not? They possess a power which is by no means common, and they ought to reap some at least of the benefit. Practically they go to work in much the same way as the cheap man. They use the same colours, and manipulate their pieces in the same way, but being more often called upon to decorate vases than plates, they must needs exercise more care. Painting is rarely executed all at once. Even the cheapest work that has any claim to be called artistic is burned twice, and of course for each firing the painter has an opportunity of retouching. Some elaborate pieces have to go through the oven five or six times, but these repeated burnings are prejudicial to the clearness of the colours.

Leaving the painter, the china generally passes into the hands of the gilder, or, as he is now sometimes called, the "decorator," because he uses colour as well as gold. And here a word about the gold used in pottery. This is of two



A Decorating Room.

kinds, pure gold and liquid gold. The pure gold is the finest that can be obtained—twenty-four carat—because any alloy would impart to the metal an inferior colour. Brought to the manufactory as brown or coffee gold, it is crushed and mixed with a proportion of quicksilver. A rapid absorption takes place, and the alloy, becoming gradually black, is ground very fine upon a special mill. A small amount of flux is added, and then the ground mixture is blended with a suitable oil, so that it can be used with a brush.

Liquid gold is the result of the chemical change known as reduction. A solution of gold is mixed with a special combination of oils, and the resulting emulsion is laid upon the ware in lines or tracings in the same manner as gold would be. The action of the fire drives off the oils, and leaves an extremely thin film of brilliant gold. Fine gold is of course also burned, and the mercury and oil being volatilised by the fire, a layer of dead gold is left, which is afterwards made bright by the labours of the burnisher.

The work of the gilder is mainly accessory. He adds the gilt edge to the painted plate, and gilds the handles of the vase. Some clever gilders are employed in working out such gold decorations as sprays and birds, and some are skilled in conventional patterns; but in all the quality demanded is truth rather than freedom, and accuracy rather than expression.

For the purpose of gilding the edges of circular pieces a simple wheel is used. A solid wooden head is supported upon a pivot, and the workman, placing his plate or saucer upon this, slowly revolves

the head while he holds his fully charged brush against the edge of the work. A line of gold is drawn out steadily and accurately as the wheel is turned, and a gilt edge appears.

A lad apprenticed to the art of a gilder is generally put to practise at the wheel for a time. The difficulty is to centre the plate accurately, and this is done by turning the wheel at a medium pace and striking the plate with the fingers until it runs truly. Naturally only defective pieces are allowed for practice, for now and then a plate will fly on to the floor under the influence of a mis-directed touch.

"Filling in" is the technical term for painting which is used to finish or fill in a printed outline.

The cost of a pattern is materially reduced if the drawing can be given by a print, partly because the actual cost of the draughtsmanship is saved, and partly because a painter of very ordinary grade can lay on colours where the outline is already put in. This work is mostly done by women and girls, and consists largely of japans and other semi-conventional patterns.

Lines and bands of colour are also allotted to women, who are called "liners," and their work is similar to that of the gilder, but less exacting. Colour is not so valuable as gold, and though the woman uses wheel and brushes in the same way as the man, the class of work that falls to her share is cheaper in grade. Of late years a good deal of gilding work has been allotted to women, but to the observing mind this is an evidence of the increasing use of liquid gold and of the degeneration of the gilder's art.

The groundlayer works upon a different plan from any of his fellows. The principle in the laying of broad bands and coloured grounds is that an adhesive oil is prepared and brushed over the ware. This is then gently dabbed with a soft pad, and when sufficiently dry the colour, in a fine powder, is dusted over the oiled surface. A smooth layer of colour is thus secured, but a good deal has yet to be done: the dust has found its way all over the ware, and must be removed from places in which it is not wanted. Sometimes, previous to oiling, the surface to be left white has to be protected by a water-colour with which is mixed some sugar or treacle; then after the colour has been dusted on to the oil the whole piece is plunged into a tub of clean water, which washes away the protecting matter and leaves the groundlaid colour adhering to the oil.

Another method of distributing colour, and one that is especially useful when shaded grounds are needed, is by means of compressed air. The colour is mixed either with water or a thin oil, and being placed in a suitable vessel is forcibly blown into spray by the blast, which is kept under complete control by a stopcock. A similar plan is commonly followed, it will be remembered, for the diffusion of scent. A good deal of work has been done in water-colour with this apparatus, and it is one of the most effective arrangements ever devised for the perfect graduation of colours.

By such methods as these the modern decorator is enabled to place the results of his labour before the public. That he is in some sort reduced to the level of an automaton is more his misfortune

than his fault, for in the rush and whirl of competition the demons of speed and cheapness rule. Strong indeed must be the manufacturer and wealthy the capitalist who can follow the bent of an artistic mind in the production of pottery for the people, and the marvel is not that so few really fine works in clay are now being completed, but that under present conditions any can be executed at all

A CHRONOLOGY

OF THE LEADING PRODUCTIONS AND EVENTS IN THE
HISTORY OF POTTERY AND PORCELAIN FROM PRE-
HISTORIC TIMES TO THE END OF THE 18TH
CENTURY.

The dates given mark the beginning of each fabrique, sometimes approximate, sometimes definite, or, if this be unknown, the earliest time at which the work became known. The dates before the Christian era are to a large extent conjectural.

B.C.

circa

- 3000. Earthenware vases appear in Egyptian hieroglyphs.
- 2690. Chinese pottery (legendary).
- 1440. Bricks stamped "Thothmes III."
- 1900. Egyptian blue glazed figures.
- 900. " " " vases.
- 900. Samian pottery.
- 711. Assyrian terra-cotta documents.
- 700. Archaic Greek vases.
- 660. Japanese pottery (traditional).
- 500. Roman pottery in common use.
- 400. Fine Greek vases.
- 400. Early British pottery.
- 300. Aretine red ware.
- 185. Porcelain invented by the Chinese.
- 50. Romano-British pottery.
- 27. Corean potters in Japan.

A.D.

- 40. Roman red ware in England.
- 490. Anglo-Saxon pottery.
- 550. Wheel-made pottery in Japan.
- 583. Blue porcelain ordered as tribute in China.
- 618. Fine white porcelain made by the Chinese
(Thang dynasty).
- 712. Hispano-Arabian ware.
- 954. "Sky-blue" porcelain made by the Chinese.
- 1107. Kouan-yao (Magistrate's porcelain) in China.
- 1150. Salt-glazing (conjectural).
- 1190. Italian Sgraffiato.
- 1200. Pottery in Valencia.
- 1214. English earthenware mentioned.
- 1230. Japanese glazed pottery.
- 1235. Hispano-Moresque pottery.
- 1250. English encaustic tiles.
- 1300. Castel Durante, faience.
- 1300. Oriental slip-coated ware.
- 1320. The Alhambra vase.
- 1350. English glazed ware.
- 1368. Finest Chinese porcelain (Ming dynasty).
- 1400. Luca della Robbia born.
- 1426. Chinese dark blue porcelain.
- 1450. Pesaro, glazed ware.
- 1455. Venice. Importation of faience forbidden.
- 1456. Luca della Robbia. First pottery.
- 1475. Faenza. Earliest dated piece.
- 1477. Urbino, maiolica.
- 1486. Pesaro. Importation of faience forbidden.
- 1498. Maestro Giorgio at Gubbio.
- 1501. Diruta, maiolica.
- 1507. Caffaggiolo, maiolica.
- 1509. Siena, maiolica.
- 1509. English costrels.
- 1510. Bernard Palissy born.
- 1513. Japanese porcelain.
- 1519. Maestro Giorgio. First signed piece.
- 1519. Venice, porcelain (example unknown).

A.D.

- 1520. St. Porchaire, faïence.
- 1521. Urbino. Earliest dated piece.
- 1524. Castel Durante, maiolica.
- 1530. English salt-glazed stoneware.
- 1539. *Grès de Flandres*. Earliest dated piece.
- 1540. Rouen, faïence.
- 1542. Venice, glazed ware.
- 1548. Piccolpasso wrote.
- 1549. Dated Arabian lamp (British Museum).
- 1560. Jackfield, pottery.
- 1573. Chinese *Sang de Bœuf* (Lang-yao).
- 1575. Ferrara, porcelain (example unknown).
- 1578. Nevers, faïence.
- 1580. Medici porcelain (Florence).
- 1589. Bernard Palissy died in the Bastille.
- 1600. Gombroon ware exported.
- 1600. Delft ware.
- 1610. Bellarmine or Greybeards named.
- 1610. English lead-glazed wares.
- 1612. Wrotham slipware. Earliest dated piece.
- 1621. Staffordshire slipware.
- 1634. Lambeth Delft. Earliest dated piece.
- 1660. Fulham, pottery.
- 1660. Toft's ware.
- 1661. Chinese *Famille Verte*.
- 1664. Paris. Réverend's porcelain.
- 1671. Fulham. Dwight's patent for stoneware.
- 1673. Rouen. Poterat's porcelain.
- 1676. Lambeth Delft. Van Hamme's patent.
- 1682. English marbled ware.
- 1686. Moustiers, faïence.
- 1686. "Natural History of Staffordshire" published (Plot).
- 1688. Elers settled in Staffordshire.
- 1689. Flint used by Dwight.
- 1690. St. Cloud, faïence.
- 1695. St. Cloud, soft porcelain.
- 1696. Tournay, faïence.

A.D.

- 1696. Lille, faïence.
- 1697. Marseilles, faïence.
- 1706. Bristol, Delft ware.
- 1706. Böttger ware.
- 1709. Meissen, hard porcelain.
- 1709. Strasburg, faïence.
- 1711. Lille, soft porcelain.
- 1718. Vienna, hard porcelain.
- 1718. Anspach, hard porcelain.
- 1719. Venice, hard porcelain.
- 1720. Bayreuth, hard porcelain.
- 1720. Flint used by Astbury.
- 1723. Chinese *Famille Rose*.
- 1725. Chantilly, soft porcelain.
- 1730. Josiah Wedgwood born.
- 1735. Doccia, hard porcelain.
- 1736. Liverpool, Delft ware.
- 1736. Capo di Monte, soft porcelain.
- 1740. Wheildon ware.
- 1740. Höchst, hard porcelain.
- 1744. Bow, Heylin and Frye's patent.
- 1744. St. Petersburg, hard porcelain.
- 1744. Josiah Wedgwood bound apprentice.
- 1745. Vincennes, soft porcelain.
- 1745. Chelsea, soft porcelain. Earliest dated piece.
- 1747. Nymphenburg, hard porcelain.
- 1750. Tournay, soft porcelain.
- 1750. Derby, pottery.
- 1750. St. Amand, pottery.
- 1750. Fürstenburg, hard porcelain.
- 1750. Berlin, hard porcelain.
- 1751. Worcester, soft porcelain.
- 1751. Derby, soft porcelain.
- 1752. Strasburg, hard porcelain.
- 1752. Longton Hall, soft porcelain.
- 1753. Bristol, porcelain (traditional).
- 1753. Transfer printing practised at Battersea.
- 1754. Frankenthal, hard porcelain.

A.D.

- 1756. Liverpool, porcelain.
- 1756. Transfer printing. Sadler and Green's affidavit.
- 1756. Transfer printing. R. Hancock at Worcester.
- 1756. Sèvres, soft porcelain, removed from Vincennes.
- 1756. Lowestoft, soft porcelain.
- 1758. Rudolstadt, hard porcelain.
- 1758. Marieberg, Delft ware.
- 1758. Ludwigsburg, hard porcelain.
- 1759. El Buen Retiro, soft porcelain.
- 1760. Leeds, faïence.
- 1760. Niderviller, hard porcelain.
- 1761. Sèvres, hard porcelain.
- 1762. Wedgwood, Queen's ware.
- 1764. Weesp, hard porcelain.
- 1768. Plymouth, hard porcelain. Cookworthy's patent.
- 1768. Chelsea painters at Worcester.
- 1769. Chelsea works bought by Duesbury.
- 1769. Wedgwood's works at Etruria opened.
- 1770. Marieberg, porcelain.
- 1770. Cookworthy removed from Plymouth to Bristol.
- 1772. Copenhagen, hard porcelain.
- 1773. St. Cloud manufactory burnt.
- 1776. Wedgwood, jasper ware.
- 1776. Bow works bought by Duesbury.
- 1780. Coalport, porcelain.
- 1782. Arras, soft porcelain.
- 1784. Willow pattern introduced by Spode.
- 1786. Chamberlain's Worcester.
- 1786. Vincennes, hard porcelain.
- 1790. Minton's porcelain.
- 1795. Josiah Wedgwood died.

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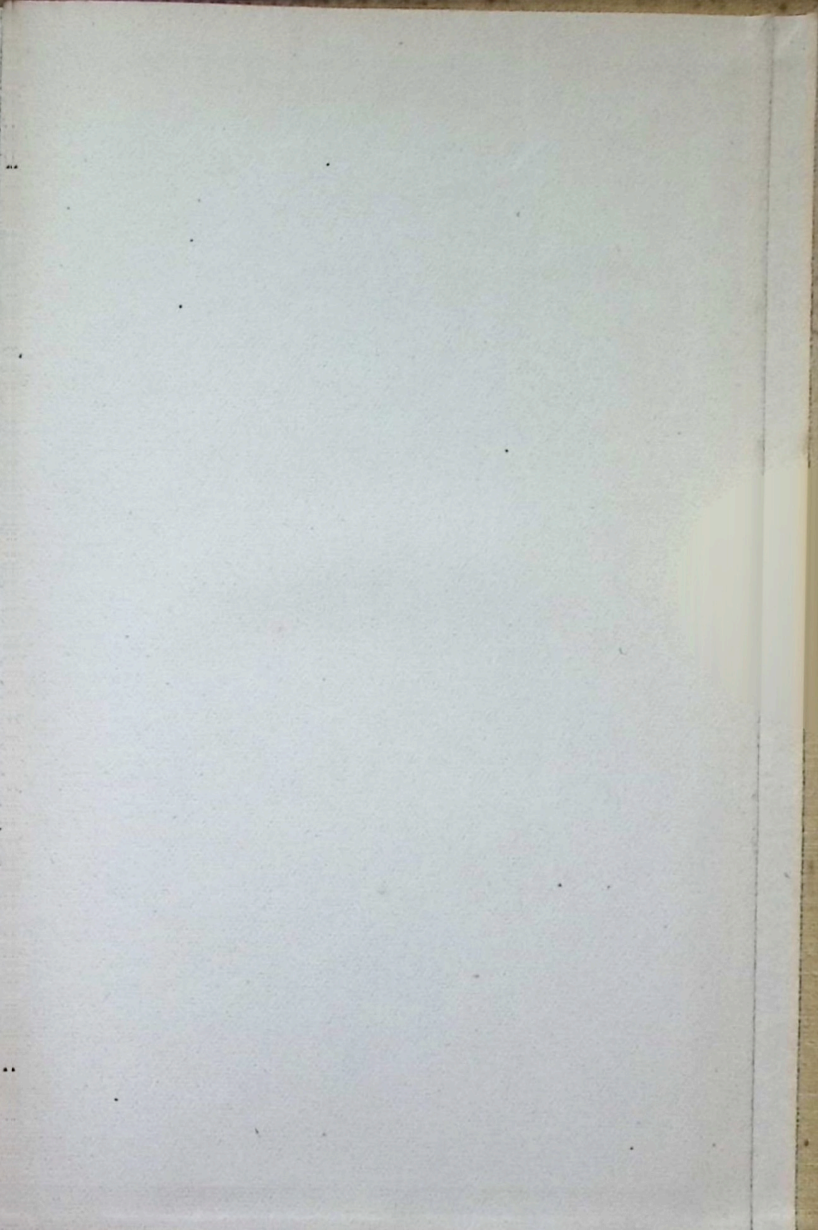
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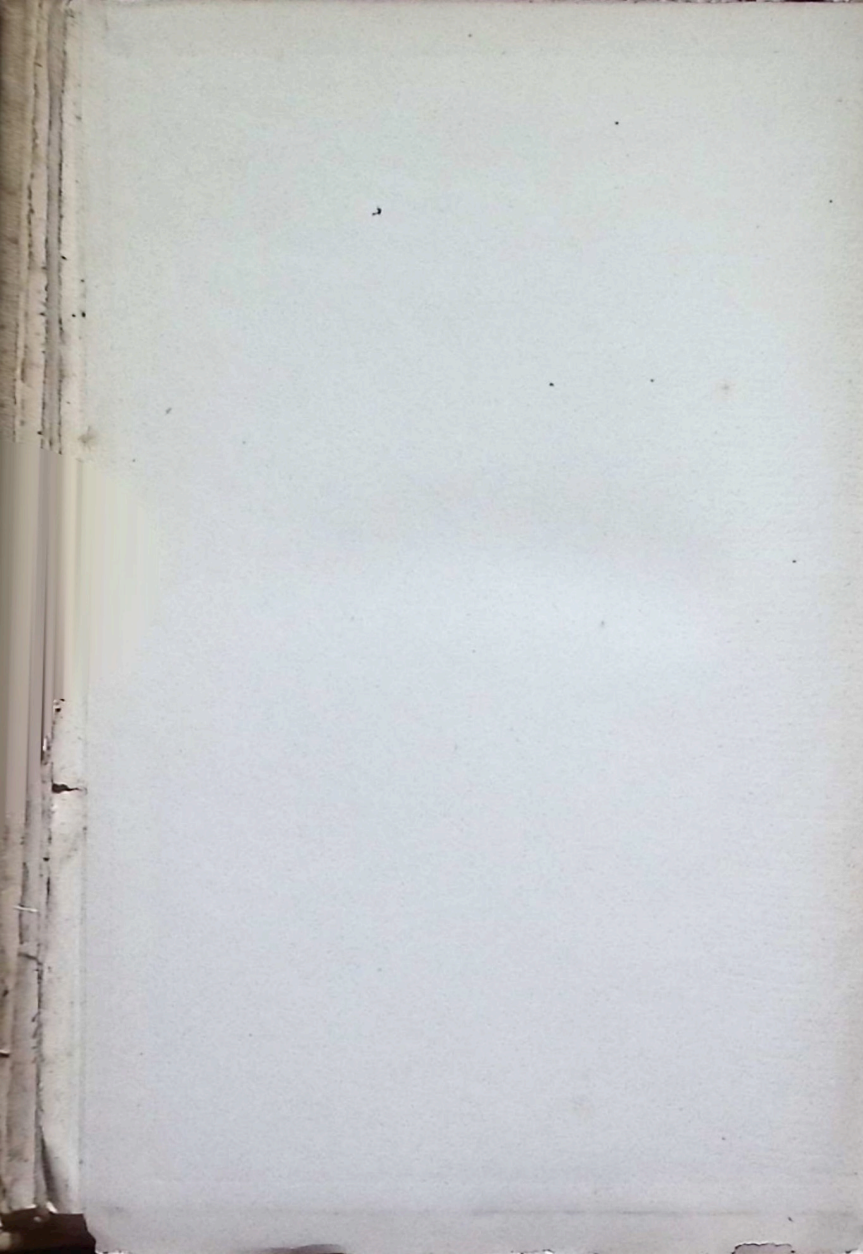
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HENRY R JOHNSON
BOOKSELLER & STATIONER
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